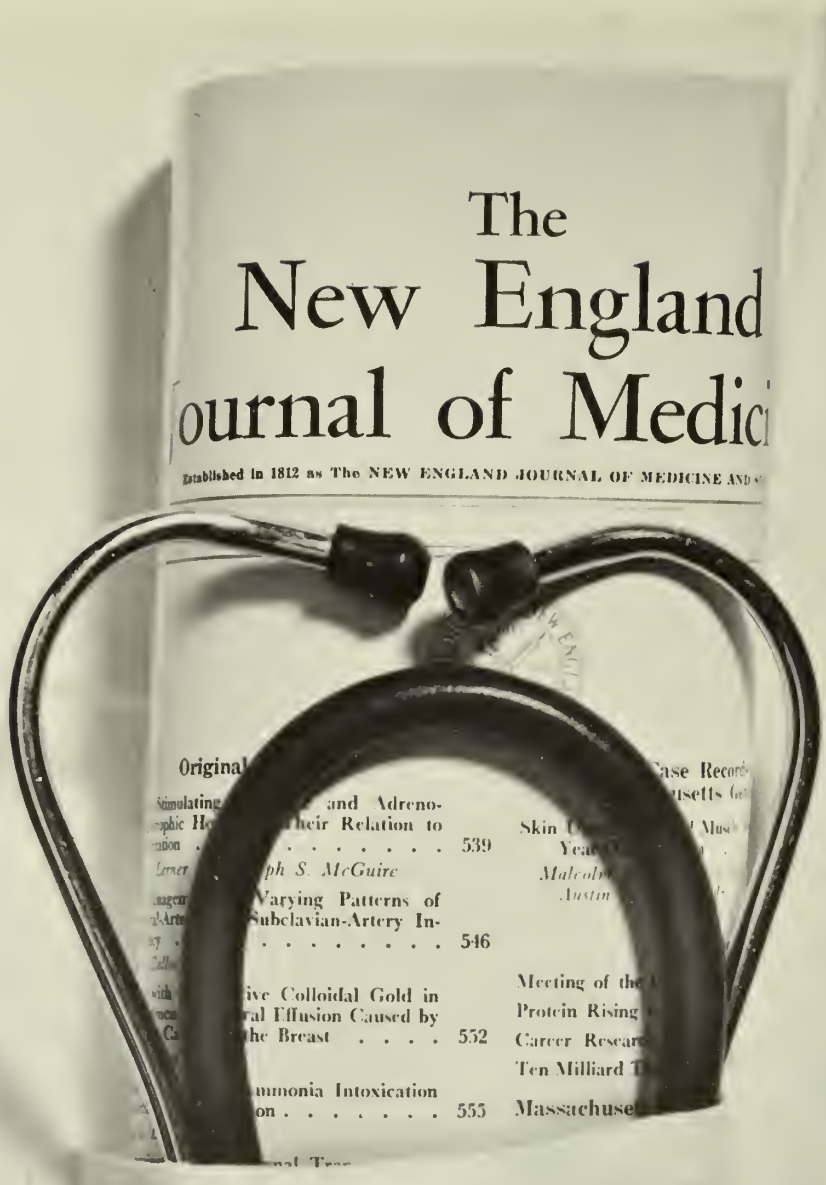
Harvard Medical Alumni Bulletin

Christmas 1968



For more than 155 years, The New England Journal of Medicine has played its role in medical circles—reporting the progress of medicine to physicians and medical students throughout the world.

The New England Journal of Medicine

10 SHATTUCK STREET, BOSTON, MASSACHUSETTS 02115

HARVARD MEDICAL
ALUMNI BULLETIN
Vol. 43 Christmas 1968 No. 2

CONTENTS

CREDITS: Cover designed by Paul Regan. Photographs: Bradford F. Herzog, pp. 2, 19, 21, 23. Artwork: Ernest Craige '43A, pp. 6, 11, 14, 15, 16.

The opinions of contributors to the Bulletin *do not necessarily reflect those of the Editorial Staff.*

The Social Development of Human Intelligence

by Leon Eisenberg, M.D.
Professor of Psychiatry

INTELLIGENCE is that characteristic of the human organism that taxonimists have selected as the designation of its uniqueness by assigning the species name: *sapiens*. In this era of strife within and between nations, of gross inequities in the allocation of resources within and between nations, of runaway increase in human populations and massive uncontrolled pollution of our biosphere, to call our species "wise" would seem the ultimate irony, perhaps even the revenge of the gods for Linnaeus' hubris. Yet we clearly exceed all other animals in our ability to solve those problems we are willing to put to ourselves. The deficit lies in the one-sided development of that problem-solving capacity; namely an enormous growth in its technological capabilities without a corresponding gain in its social qualities.

The failure of our educational institutions to have devoted equal time to the cultivation of the social roots of intelligence is a consequence of a gross misconception of its nature. Human intelligence is, in fact, a social product; that is, a product of the interaction between men. The misconception of intelligence as an autonomous individual trait has not lacked for leading thinkers to have challenged it; indeed, the challenge goes back at least as far as the French Encyclopedists. But the individualistic view was indelibly impressed upon educational institutions during the period of rapid growth of state supported schools in response to the manpower needs of industrialization. The dominant political model of the nineteenth century depicted national progress as resulting from the venturesome activity of the individual entrepreneur under a government policy of economic laissez-faire. This model was given a pseudo-biological justification when Spencer, taking from Darwin only the catch phrase "survival of the fittest," managed to misrepresent the very delicate balance of cooperative and competitive factors in ecology as a replica of his own privileged view of society.[1] That philosophy of industrial capitalism-cum-Spencerism continues to influence contemporary child rearing and schooling.

A very different set of premises

Let me at the outset set forth a very different set of premises that I believe are warranted by the available theory and evidence in behavioral science. First, that intelligence develops and does not spring forth full blown at the moment of conception. Second, that its development is a social process, strictly dependent upon the quality and organization of the human environment in which it evolves. Third, that human intelligence is social intelligence; the problems on which it cuts its teeth, the methods it is able to elaborate, and the solutions it creates are set by the social context in which they are posed and solved. And fourth, that these theses, though academic in phraseology, carry revolutionary implications for social policy. The burden of my argument will be their justification.

To say that intelligence develops faces us at once with what is meant by development.[2] The term may be used in a Platonic sense: the changes over time are seen as the realization of what was immanent from the first; that is, the attainment of an ideal given by the gods or by the genes, as you will. In this sense, there is in fact nothing new between adult and infant, merely the unfolding in the former of that whose essence was already fully present in the latter, much as the opening of a rose from its bud. Such a view is incompatible with the concepts of modern biology.

We can agree that nothing can appear in the adult organism, the capacity for which was not present in its genetic complement by definition. But that assembly of genes, while necessary, is not a sufficient condition of development. That is, given an embryo with certain genetic constituents, the transitions that occur over time are dependent on the *interactions* between those nuclear components and the surrounding cytoplasm of the cell, between the cell and its neighbors, between the organized cell mass of the embryo and its uterine environment, between the uterus and the body fluids of the mother, and between the mother and her physical and social environment. At particular stages in that developmental sequence, certain opportunities as well as certain vulnerabilities are present; before that stage they cannot be induced; after it, they cannot be recouped.

The most convenient illustrations of this principle come from experimental embryology. As the optic cups are extruded from the forebrain, they induce, in the overlying ectoderm, the formation of a crystalline lens. If the optic cups are removed before this stage, the lens fails to form; delayed replacement of optic cups from another embryo will not be successful in inducing lens formation if the time lag is excessive.[3] To take another example, the forerunner of the pancreas becomes determined as pancreas only if surrounded by mesenchyme. That is, even though the cells of the pancreatic rudiment have all their genes intact, they will not evolve into mature pancreas without a substance supplied by non-pancreatic tissue. Contrariwise, once that influence has been exerted, pancreatic development continues in the absence of further contact with mesenchyme.[4] At the level of systems, the development of fully mobile joints is dependent upon the random activity of muscles that produce the phenomenon we recognize as foetal movements. The regular intra-uterine injection of curare (which produces paralysis of muscles) into pregnant sheep results in the birth of lambs with ankylosed — that is, frozen — joints.[3] Examples need not be multiplied. The point is that development is sequential and interactional — or, as Aristotle termed it, epigenetic.

A second premise underlying my argument has even more ancient Greek roots. It is to be found in the Hippocratic dictum that the brain is the organ of the mind. I do not suggest that mind is fully to be explained by brain, but that intactness of brain is a precondition for proper function of mind. Thus, our concern with the development of intelligence must include a concern for the development of brain. Setting aside for the moment phylogenetic considerations, let us consider ontogeny.

The caste structure of society has major consequences for biological integrity

There are many biological factors capable of influencing central nervous system development in the foetus and young organism: time limits us to a few that are particularly salient to contemporary conditions. Complications of pregnancy and parturition (such as toxemia, bleeding and prematurity) are associated with brain defects in children who display clinical disorders that extend from cerebral palsy and epilepsy through mental deficiency and learning disabilities.[5] The "biological" disorders in the mother are class related; the toll increases as the socioeconomic scale is descended. Animal studies provide unequivocal evidence that protein deficient diets during pregnancy and lactation impair fetal and infant development and lead to permanent sequelae in adult life. The offspring of mothers so treated never attain the stature of control foster-reared litter mates, exhibit irreversible metabolic defects, and display impaired learning.[6] Clinical and epidemiological data attest to similar phenomena in infants of malnourished mothers and in infants exposed to the twin evils of malnutrition and infection in the first two years of life; witness the ghastly tragedy now taking place in Biafra. Unlike the catch-up that occurs when malnourishment is succeeded by repletion later in childhood, early affliction leads to permanent stunting of stature and performance.[7] Access to food and vulnerability to infection, I need not add, are functions of class and ethnic status. Thus the caste structure of society has major consequences for the biological integrity of the children who grow up in it. The toll is the highest in the underdeveloped nations of the world but the same morally intolerable and technologically inexcusable crippling of children occurs in the underdeveloped areas of so "developed" a country as our own. There is no more telling example of the gap between economic and moral development.[8]

Our abbreviated enumeration of the necessities for brain development, however, has only begun. The central nervous system requires far more than protection from injury and adequate nutrition; its structures are critically dependent upon a proper balance between excitation and inhibition for their very maintenance, let alone their maturation. The clearest illustration is to be found in the visual system; retina, optic nerve, geniculate body and striate cor-

tex.[9, 10, 11] At birth, the retina is already intricately organized. It serves as a visual analyzer; there are cell groups that respond only to horizontal light fronts, others to verticals, still others to obliques, some to fronts moving left to right, others, right to left. Moreover, each eye commands fields of striate cells that it alone can trigger off as well as fields that are bilaterally responsive. Here we have a prime example of apparently autonomous development, for this organization predates visual experience. Yet, and this is its particular salience for my argument, these systems do not persist in the absence of adequate external reinforcement. If one eye of a newborn kitten is deprived of patterned visual input for several months, there is marked shrinkage in the striate fields it is able to excite and the surrender of much of its shared command; these changes persist indefinitely even after all obstruction to vision is removed. These functional changes are accompanied by shrinkage in the cell aggregate of the geniculate body served by that eye. A similar period of restriction later in life has no such effect.

Even more striking is the observation that the impact on the striate field of either eye is greater if only one eye is occluded. With both eyes sealed, there is less interruption of bilaterality. That is, it is not merely stimulation that matters, but pattern and balance as well. This elegant series of laboratory investigations (by Hubel and Wiesel) immediately suggests a clinical counterpart in the syndrome of *amlyopia ex anopsia.* In a child with extraocular muscle imbalance, there is progressive loss in central visual acuity in the deviated eye, such that normal vision cannot be restored if surgical correction of the deviation is delayed beyond the sixth year. This, then, is an example of neural pathways preformed at birth that deteriorate if they are not maintained by postnatal stimulation.

To pursue the visual system as a prototype one step further, we find that visual guidance of placing responses (again in the kitten) does not come about automatically, or even in the presence of passive visual experience, but only when the animal is permitted *active* exercise of movement and vision simultaneously.[12] These findings hold true for the visual and tactile systems in primates as well.[13, 14] We need not here review an extensive literature. Suffice it to say that the alimentation of the brain is to be found in stimulus patterns as well as food stuffs.

If such processes as sensation and intersensory coordination display exquisite sensitivity to environmental contingencies, we can anticipate that higher order psychological functions will be even more responsive. In all vertebrates that have been studied, rearing in a restricted physical environment — which always involves social isolation as well — results in markedly deviant behavior. Songbirds, which in the wild sing in so species-typical a fashion that their songs identify them as precisely as their morphology, will, if reared in isolated sound proof chambers, emit no more than abortive caricatures of their normal lyric.[15] Dogs so reared fail to solve simple barrier problems, whirl in futile circles, and cannot compete against control litter mates reared in domestic environments.[16] In monkeys so deprived, the mechanics of copulation itself, a process one might have supposed to be innate, so fundamental to species survival as it is, becomes an almost impossible enterprise; if successfully impregnated, such females function abysmally in mothering their young.[17]

EVOLUTION trades the security of reflex automatisms in exchange for the selective advantage of initially riskier but ultimately more adaptive learned behavior; this process reaches its apex in man. The human infant is born the most immature of animals, with a brain only one fourth its final size. In consequence, the infant is dependent upon adult caretaking for the most prolonged period, but a period during which he is enabled to acquire the behavioral repertoire necessary for successful adult function. Parenthetically, that period is the longer, the more technologically elaborate society into which he is born; culture here has imitated nature.[8] The sensitivity to environmental subtleties, so clearly evident in lower forms, is therefore all the greater in man.

The evidence is clinical rather than experimental but it is compelling in its extent and its consistency. It is reported that King Frederick of Prussia, in his zeal to determine whether the original language of mankind was Hebrew or Greek, ordered that babies be reared in a nursery without any words spoken to them; his linguistic experiment terminated unexpectedly when the babies languished and died. No one would today "deliberately" raise human infants in deprived environments but our consciences are not yet sufficiently nice to keep us from permitting those very conditions to come about by social neglect. Unhappily, therefore, data on the effects of deprivation abound in this age of the great society.

We have a moral imperative to prevent stagnation in infancy

Infants who are reared in institutions staffed by few and inconsistent caretakers display marked retardation on all indices of physical and psychological maturation. If nutrition and cleanliness are maintained at a higher level but without specific enrichment of adult-infant social interactions, the lag in adaptive behavior continues and results in developmental quotients in the defective range.[18] If these conditions are allowed to persist throughout childhood, the youngsters exhibit the psychological stigmata of mental deficiency and become adults who function as poorly as those with intrinsic brain pathology. It is not known with certainty for how long severe psychosocial deprivation can be tolerated by the organism before the functional retardation becomes irreversible. Rapid and apparently complete recovery can occur following adoption into family life by the end of the first year.[19] Similarly gratifying results were obtained in the Skeels study by nursery school enrichment and home placement in the fourth year of life.[20] Other reports have been less sanguine.[21] The earlier the rescue and the more complete the restitutive measures, the better is the outcome. We have a moral imperative to prevent stagnation in infancy but we have no less a responsibility to continue efforts at resurrection for the older victim; lest we condemn tens of thousands of children, we dare not draw unwarranted inferences about irrecoverability on the basis of ethological concepts of critical periods valid for some species but not yet established for man.

Extremity of neglect with its inexorable consequences is of course the limiting case. It obtains for only a minority of children, though it should not be tolerated for a single child, given the means and the knowledge we have at hand. Epidemiologically, the major problem is far larger numbers

of children who experience psychosocial deprivation in lesser degree than the orphanage prototype, but to an extent sufficient to impair developmental acquisition of the full range of cognitive abilities. These are the children of the poor, particularly those of low status ethnic groups. In the United States, those at greatest hazard are the black, the Amerindian, the Mexican and the Puerto Rican, but serious risk is present for Appalachian and other whites in isolated pockets of poverty. Without exception, comparative studies of academic achievement find the children of the poor scoring far less well than their middle class age mates, with the children of the black poor doubly disadvantaged.[22] The gap in school performance becomes progressively greater with ascending age and reaches a crescendo in high percentages of dropping out of school, subsequent unemployability and what society labels as social deviance. It has been fashionable since at least the time of Herbert Spencer to ascribe these social class discrepancies to differences in biological fitness induced by assortative mating of the less capable. This theory has the peculiar virtues of at once allowing those of us who have made it to glory in our superiority and at the same time of justifying economies in social welfare and educational measures on the ground that we deal with inherent and irremediable defects. This belief persists, perhaps for these self-serving rationalizations, despite the progressive amassing of evidence that the most parsimonious explanation of these differences lies in social experience and that programs of early enrichment minimize, if they do not completely eliminate, the disadvantages associated with low caste.[23]

For the moment, however, let us interrupt our discussion of the ontogeny of cognitive functions and return to an examination of the phylogenetic roots of intelligence. The first *hominid* on route to *homo sapiens* was the Australopithecine ape-man whose fossil remains in southern Africa have been dated back some two million years.[24] His bone structures indicate a "habitually bipedal plantigrade primate"; that is, an animal that walked with its two feet flat on the ground.[25] The hind limbs are more *sapiens*-like than the fore limbs, thus identifying the assumption of the erect posture as the crucial step in freeing the hands for prehensile function. Of particular interest is the presence of primitive stone tools in the same stratum with Australopithecine fossils. If we may draw the inference that these eoliths were of Australopithecine manufacture, then we must conclude that planned tool making occurred at a brain size (435-600 cc) no greater than that of contemporary great apes (275-750 cc) and was followed by a three- to four-fold expansion of the brain. Here we depart from Aristotle who argued: "Anaxagoras has said that it is the possession of hands that made man the most intelligent of animals. The probability is that it was because the most intelligent that he got hands." To the contrary, man's prehensile hands increased the adaptive value of brain mutations that enhanced their cunning. The use of tools freed *hominids* from their dependence upon powerful jaws to masticate plant foods and permitted unfettered expansion of the brain case. Active manipulation of the natural and social world played a crucial role in the further evolution of proto-man.

As to his social world, our evidence is at best inferential but it is internally consistent. Observations of primate colonies in the wild demonstrate convincingly that social bonds are essential to the survival of the individual; correspondingly, genetic mechanisms that increase the likelihood of exhibiting and learning social behavior are fundamental in primate biology. The young have built-in mechanisms for clinging, rooting and nursing. The stimulus characteristics of the young have attractive value for the adult primate.[26] Nurslings and mothers alike exhibit signs of distress when they are separated. The young are indoctrinated into colony life by mothering, grooming, peer play, and hetero-sexual activity. They learn the facial, gestural and vocal patterns that serve to maintain a remarkably stable social organization, in which sustained intracolony aggressive behavior is far less common than cooperative, though heirarchically organized, behavior.

This telegraphic account suggests the antecedents of the social patterns in the stone age human societies that have survived into the contemporary era.They remind us that behavioral elements as well as structural ones are vital aspects of our biological heritage. All known food gathering and hunting societies exhibit the following general characteristics: relatively open groups of twenty to fifty members; a kinship ethic that prescribes mutual aid (indeed, food sharing appears to be the *sine qua non* of the human condition); division of labor by sex and by domestic unit; rules to regulate mating and competition; a craving by each individual for response from his social environment, a craving as fundamental as that for food.

The "intelligence" displayed by the members of hunting and gathering societies is different from, but not necessarily inferior to, our own. They may perform poorly when given tests of abstract geometric ability but succeed admirably in tracking animals in the wilds, a test most of us would fail — though no Australian or African Binet has yet bothered to standardize it as a basis for arguing the genetic inferiority of Caucasians. The social invention which distinguishes man qualitatively from all other animals, his capacity for language, is a common discovery of all known human societies. Each healthy member of any given society is capable of learning any other language, at least if exposed to it early enough in life. Since only man has language, the capacity for language learning is genetic; what language is learned and how well it is learned is a function of individual social experience. The very possession of language — that is, symbols manipulated by rules of syntax — represents a high order of ability at abstraction. To be handicapped in social function by language impoverished in its vocabulary and its adherence to the grammatical rules of the standard-setting group in society is to suffer severe handicap indeed.

Aggression is no more ubiquitous than is generosity

Just as languages differ, so do customs and values. To the Eskimo, the striking of a child was unimaginable; to California Indians, the very concept of war was incomprehensible. In some societies, the gods are malignant and vindictive; for others, benign and loving. The most remarkable characteristic of human behavior is its variability; aggression is no more ubiquitous than is generosity. Freud's dictum[27]: "The tendency to aggression is an innate,

independent, instinctual disposition in man" is a latter-day Spencerism, perhaps understandable as a pessimistic extrapolation from recent history but in no sense a biologically compelling conclusion. The ends to which intelligence is used are determined by social values just as they are molded by those values. What distinguishes human intelligence is the social context that is the necessary condition for its appearance.

IF we are to build our social psychology on biological foundations, as I believe we should, let us do so with regard for the accuracy of the evolutionary generalizations we borrow. When we draw intellectual sustenance from Darwin, let us recall what Darwin[28] in fact had to say: "I use the term Struggle for Existence in a large and metaphorical sense, including dependence of one being on another, and including (which is more important) not only the life of the individual but success in leaving progeny." In man, success in leaving progeny depends upon a complex web of social behaviors to which the biological understructure is man's remarkable capacity for learning. It is arrant nonsense to talk of human nature as though it were a biological invariant[29]. Surely, no social order can long survive that denies man's basic biology; hence, the rapid extinction of religious sects that demand celibacy. But the culture can demand the repression of overt aggression, as among Pueblo Indians, or solicit it actively, as among Brazilian Indians, without exceeding man's capacity for compliance. Biological variation does in part account for the differences in behavior within relatively homogenous societies. But whatever differences have been produced in the genetic pools of the major human groups by inbreeding are insufficient to account for the enormous cultural differences between them; these result from the history, the geography, the technology, the organization, and the acculturation patterns of each society. Thus, they are open to change, once a society determines that its existing structures are not fulfilling its aspirations. And this is precisely what is being demanded by the youth of countries as diverse as the United States, France, England, Czechoslovakia, the Soviet Union and China. We should be profoundly grateful to the young, whose idealism represents the greatest asset for a better future. However tenuous the solutions they have as yet been able to offer us, they have pointed to the inhumanity of societies that make men slaves to machines, that celebrate public slogans which no longer conform to private experience, and that deny to the individual a right to participate in shaping his own life. We have been too ready to make our peace with existing evils.

Our very accomplishments threaten our survival

Because we have not yet displayed the same concern for the social qualities of intelligence as we have for its merely technical attributes, our very accomplishments threaten our survival. Our scientific virtuosity has been put to the service of a nuclear armory now large enough to kill each of us many times over. Our extraordinary accomplishments in farm and factory have produced a glut of plenty in some nations while peoples elsewhere starve to death. Given the rising tide of expectations the world over, no nation of haves will be able to maintain a hegemony over the have-nots except at the cost of military adventure with its growing risk to survival.

The contrast between our intellectual prowess in understanding and manipulating the physical world and our insensitivity to, if not our debased judgments of, the social purposes of that manipulation points up in no uncertain fashion the perversion of intelligence. That which extended man's dominion can become the cause of his extinction, if it be divorced from its social roots. With a shudder, I recall to you Jan Myrdal's searing indictment of Western intellectuals:

> I take it for granted that my readers remember . . . the final solution of the Jewish question; the Stalin era, the Churchill decision to bomb the civilians, the colonial wars . . . OAS, the lying politicians, everything. But I want to underline that it has been the European, the Western intellectuals that have led and fulfilled these actions in every phase. We have filled the universities with learned men giving rational motivations and reasonable techniques for every crime. And in every new betrayal we have always been able to supply the demand for hangmen.

The challenge is squarely put. It cannot be evaded. The development of the mind does not take place in a psychological vacuum; it is part and parcel of the conditions of life. To pretend that we are or should be neutral, are or should be beyond moral judgments, are or should be concerned with attitudes and not conditions, is to become not agents for man, but accomplices in his betrayal.

The central and overriding problem for mental health and human development at this point in time is the Viet Nam war. It has cost tens of thousands of lives, hundreds of thousands of casualties. Resources sufficient to have made Viet Nam a paradise and to have gone a long way toward stemming the pestilence in American cities have been expended in a futile effort to combat ideas by killing people who do, or might, adhere to them. War has been the only condition known to a generation of Vietnamese children. American society has been plunged into a crisis of values; a nation cannot pledge itself to a holy war without having to deny the very humanity of its adversary, and, by so doing, to decrease its own. The meetings in Paris were a reluctant concession to peace sentiment; some doubt that they are intended to succeed; they will not, if we mistake promise for accomplishment and lessen our insistent press for its end on behalf of Vietnamese children, of American children, of all children.

The second major barrier to healthy development is racism. Its primary victims are the ethnic minorities who suffer physical insult and psychological assault. But those who are prejudiced *and* those who tolerate prejudice undergo a warping of their own psychological development, based as it is on a spurious sense of superiority. It rends nations in two and eats into the very fabric of the entire culture. The American crisis of race does not need recounting here; unhappily, racism is no unique American phenomenon. Its most virulent public proclamations may be found in South

Africa and Rhodesia but rare indeed is the nation that is free of it, witness the antisemitism in Poland, the savageries against the Ibos in Nigeria, the restrictive immigration laws in England. Here again, we who as professionals see the evil consequences of prejudice for oppressor as well as oppressed have a moral imperative to speak out, however unwelcome the message may be and whatever the personal consequences.

The third of the problems lies in the gross inequalities in access to resources within nations and between nations. Here I would remind you of the burden of my address: the cumulative toll of malnutrition, disease, family disruption and educational disadvantage upon mental development. Not only do we face the present misery of the underprivileged child, but mankind will continue to pay the price in the crippling beyond repair of the future man. The resources now hoarded by the few must be used with generosity for the benefit of all, if any are to survive. Men will not do so while war exsanguinates them and racism blinds them.

Hence stems the order of priorities in which these three great goals of mental health have been listed. Our educational horizons must be expanded to include experiences that will enable the young to learn to recognize their dependence upon one another if they are to be motivated to strive for goals grander than personal gain. Such recognition flows precisely from an understanding of the social genesis of our common humanity.

I do not suggest that these goals are easily attained or that no other significant problems remain. Indeed, history teaches us that each solution brings new challenges in its wake. There is no final state of grace. It is in the very process of striving for social betterment that man makes himself more human. A century ago, Frederick Douglas, a courageous black American who escaped from slavery to become a leader in the movement for the abolition of bondage, wrote: "Without struggle, there is no progress." I call upon you to join in that struggle in the name of children everywhere.

This article stems from an address to the Seventh International Congress of Mental Health, and will be published by J. and A. Churchill Ltd.

BIBLIOGRAPHY

1. Spencer, H.: *Social Statics.* London, Williams and Norgate, 1902.
2. Eisenberg, L.: Clinical considerations in the psychiatric evaluation of intelligence in *Psychopathology of Mental Development.* Zubin, J. and Jervis, G.A. (eds). New York, Grune and Stratton,.1967.
3. Coulombre, A.J.: Steps in embryonic development: Some implications for developmental pharmacology in *Drugs and Poisons in Relation to the Developing Nervous System.* Public Health Service Publication No. 1791. Washington, U.S. Department of Health, Education and Welfare, 1967.
4. Grobstein, C.: Cytodifferentiation and its controls. Science.: **143:** 643-650, 1964.
5. Pasamanick, B. and Knobloch, H.: Retrospective studies in the epidemiology of reproductive casualty. Mervill-Palmer Quart. Behavior and Development **12:** 7-26, 1966.
6. Chow, B.F., Blackwell, R.Q. and Sherwin, R.W.: Nutrition and development. Borden Review. 1968. (In press)
7. Cravioto, J., et al: Nutrition, growth and neurointegrative development. Pediatrics **38:** 319-372, 1966.
8. Eisenberg, L.: A developmental approach to adolescence. Children **12:** 131-135, 1965.
9. Wiesel, T.N. and Hubel, D.H.: Effects of visual deprivation on morphology and physiology of cells in the cat's lateral geniculate body. J. Neurophysiol. **26:** 978-993, 1963.
10. Hubel, D.H. and Wiesel, T.N.: Relative fields of cells in striate cortex of very young, visually inexperienced kittens. *Ibid* **26:** 994-1000, 1963.
11. Wiesel, T.N. and Hubel, D.H.: Single cell responses in striate cortex of kittens deprived of vision in one eye. *Ibid* **26:** 1003-1017, 1963.
12. Held, R. and Hein, A.: Movement-produced stimulation in the development of visually guided behavior. J. Comp. Physiol. Psychiat. **56:** 872-876, 1963.
13. Riesen, A.H.: Effects of stimulus deprivation on the development and atrophy of the visual sensory system. Am. J. Orthopsychiat. **30:** 23-36, 1960.
14. Nissen, H.W., et al: Effects of restricted opportunity for factual kinesthetic, manipulative experience on the behavior of the chimpanzee. Am. J. Psychol. **64:** 485-507, 1951.
15. Thorpe, W.H.: The ontogeny of behavior in *Ideas in Modern Biology.* Moore, J.A. (ed). New York, Natural History Press, 1965.
16. Melzak, R.: Effects of early experience on behavior in *Psychopathology of Perception.* Hoch, P.H. and Zubin, J. (eds). N.Y., Grune and Stratton, 1965.
17. Harlow, H.F. and Harlow, M.K.: The effectional systems in *Behavior of Non-Human Primates* (Vol II). Schrier, A.M., Harlow, H.F. and Stollnitz, F. (eds). N.Y., Academic Press, 1965.
18. Dennis, W. and Najarian, P.: *Infant Development Under Environmental Handicaps.* Psychol. Monogr. 71 (7), 1957.
19. Sayegh, Y. and Dennis, W.: The effects of supplementary experience upon the behavioral development of infants in institutions. Child Develop. **36:** 81-90, 1965.
20. Skeels, H.H.: *Adult Status of Children with Contrasting Early Life Experiences.* Monogr. Soc. Res. Child Develop. Serial #105, 31 (#3), 1966.
21. Goldfarb, W.: Emotional and intellectual consequences of deprivation in infancy in *Psychopathology of Child hood.* Hoch, P.H. and Zubin, J. (eds). N.Y., Grune and Stratton, 1965.
22. Eisenberg, L.: Reading retardation: I. Psychiatric and sociologic aspects. Pediatrics **37:** 352-365, 1966.
23. Eisenberg, L.: Social class and individual development in *Crosscurrents in Psychiatry and Psychoanalysis.* Gibson, R.W. (ed). Philadelphia, J.B. Lippincott Co., 1967.
24. Dart, R.A.: Australopithecus africanus: The man-ape of South Africa. Nature **115:** 195-199, 1925.
25. Napier, J.: The locomotor functions of hominids in *Classification and Human Evolution.* Washburn, S.L. (ed). Chicago, Aldine, 1963.
26. Rheingold, H.L. (ed): *Maternal Behavior in Mammals.* N.Y., John Wiley and Sons, 1963.
27. Freud, S.: *Civilization and Its Discontents.* London, Hogarth Press, 1930.
28. Darwin, C.: *On the Origin of Species.* A facsimile of the first edition. Cambridge, Harvard University Press, 1964.
29. Eisenberg, L.: Can human emotions be changed? Bull, Atomic Scientists **22:** 27-31, 1966.
30. Myrdal, J.: *Confessions of a Disloyal European.* N.Y., Pantheon Books, 1968.

The University of

by Walter Hollander, Jr. '50

THE University of North Carolina was the first state university to open its doors (1795). The University of North Carolina School of Medicine began in 1879 with a preceptorial type of instruction, but it closed in 1886. It reopened in 1890 with a one-year basic science curriculum designed to prepare students for transfer to the better degree-granting medical schools. Dr. Richard H. Whitehead fathered and directed this new School; in addition, he served as Professor of Anatomy, Physiology, Materia Medica, and (after 1900 when the School was fully integrated with the University) as Dean. In 1896 a two-year basic science curriculum was instituted. In 1902 a clinical division was started in Raleigh but for several reasons, primarily financial, it was closed in 1910, and the School reverted to a two-year curriculum.

From the outset there was a dedication to teaching that soon earned the School a fine reputation and enabled its students to transfer to outstanding four-year schools. Harvard accepted many — in some years as many as seven or more from a class of 35 to 50. From the start, some of the small Medical Faculty were productively engaged in research.

For perspective it is interesting that not until 1909 was any prior college education required for admission — and then only one year. In 1916 it was made two years and some years later the present three year minimum was set. In 1912 the medical library had an annual book fund of 200 dollars and subscribed to 17 journals; last year the University's Health Affairs Library had a book fund of ten thousand dollars and subscribed to more than 1900 journals.

In 1941 Walter Reece Berryhill '27 became Dean, a most auspicious event for the future of the School. Soon afterwards Dr. Berryhill ended his annual report for the year 1940-41 with these words:

> In spite of the national emergency we should not lose sight of our ultimate goal of establishing a four-year school, and we ought to be continually thinking and planning so that we will be in a position to take advantage of any private endowment or support from the national government when the appropriate time arrives . . . It is inevitable that we take this step if this school is to survive, and what is more important, if the state and university are to fulfill their obligation to the people of the state . . .

A year later he wrote:

> With the inevitable revolutionary changes that must occur after the war in providing more adequate care for the low income groups and with the continued need for physicians, . . . there would seem to be an excellent opportunity to realize the ideal of this school for which we have worked so long.

These quotations illustrate, directly or by inference, why the University of North Carolina School of Medicine and its Hospital are living monuments to the vision, wisdom, leadership and sense of responsibility with which Dr. Berryhill guided the School not only to and through its transition to a major Medical Center, but also during another 12 exciting, challenging but difficult years. Obviously, countless persons, including Dr. Berryhill's predecessors, have made essential contributions to the School's progress and present eminence. Nevertheless, it seems to me indisputable that no other single person played as vital a role or gave of himself so generously as did Dr. Berryhill during his 23 years as Dean. In 1964 Dr. Berryhill became Dean Emeritus, but fortunately he is continuing to serve the School as Director of the Division of Education and Research in Community Medical Care. Since 1964 the Dean has been Isaac Montrose Taylor '45.

It was in 1947 that the North Carolina General Assembly authorized expansion to a four-year medical school as part of a state-wide program for better health. Funds were appropriated toward construction of a 400-bed teaching hospital connected to the main Medical School building on the University campus in Chapel Hill. Subsequent funds provided for a 54-bed psychiatric wing and a 100-bed tuberculosis/chronic/lung disease hospital. North Carolina Memorial Hospital — the State's memorial to its war dead — is an integral part of the Medical School. Accordingly, "Medical Center" will henceforth be used to mean both School and Hospital. The decision to place the Medical Center on the campus of its great parent University was a victory for those who believed the future of medicine would be increasingly based on the fundamental life, physical and social sciences, and that proximity to the University would prove more important than proximity to the larger numbers of patients automatically available in a larger urban area. Subsequent events are, I believe, a strong vindication for that decision.

The present four-year School in Chapel Hill began with the opening of North Carolina Memorial Hospital and the start of a third-year medical class in 1952. Fifteen years later the University of North Carolina Medical Center is dramatically changed. It is no longer a small, intimate school costing at most a few hundred thousands of dollars a year; instead, it is a mammoth, complex, inevitably less intimate (though no less friendly) enterprise with expenditures of over twenty million dollars a year. Its primary purpose is better health care for the people of North Carolina. It is, therefore, heavily engaged not only in pre- and postgraduate medical education, but also in the pursuit of new knowledge and the provision of excellent medical care to patients referred by doctors throughout the State. In the past several years there have been more than 110,000 out-patient visits a year, and the Hospital (running at 80-90 per cent occupancy) has had over 125,000 patient-days a year.

North Carolina

Assistant to the Dean

AT this point, it is appropriate to let our Faculty speak for itself. In January, 1966, the Medical Faculty adopted by vote a "Policy Statement," part of which reads as follows:

As a State University, we have a special opportunity and challenge for leadership and service in meeting the health needs of the State.

Our goal is to educate the best types of physicians for the needs of the State. In achieving this, it is our opinion that we will develop a broad spectrum of competent physicians . . .

Because this is a state-supported medical school, the Admissions Committee will give preference to properly qualified residents of North Carolina . . . Since we deem it our goal to have the best possible medical school to provide the most effective physicians for the State, it is essential that our student body be of the highest possible caliber . . . We will . . . [try] . . . to attract the best possible applicants from both without and within the State. This will include presenting the opportunities of medicine in a vigorous manner to high school students and undergraduates . . .

. . . We believe the best education, no matter what future course the student follows, is provided by having a faculty and student body with breadth and variety of interests, attitudes, and goals. We hope to develop in this School both those who will deliver primary care to the public as well as those who will be the next generation of educators and investigators . . .

We believe that a properly trained family practitioner is among those qualified to deliver primary medical care . . . [that he] . . . should have essentially the same degree of training and . . . status as

. . . in a virtual trailer camp . . .

specialists. He should be trained in depth in both internal medicine and pediatrics, and should have an understanding of the emotional needs and psychology of the individual . . . [and] . . . of the family in its relationship to society . . .

. . . because of the ever-increasing complexity of medicine, it seems desirable to make it possible for some students to make an early career decision . . . We also intend to develop a very flexible educational program so that students may pace their rates of progress and pursue areas of special interest in depth . . .

We intend to give leadership in determining the course of medical education . . . until the time of actually starting career patterns . . . [and] . . . in continuing education throughout the physician's entire career. The fact that the majority of our graduates practice in this and neighboring states . . . provides us with a special challenge and opportunity.

This statement was formulated at the start of a faculty-wide self-appraisal of the curriculum. It is primarily a formalization — not a change — and provides goals against which to measure our present program. It is important to note the *primary responsibility to the people of North Carolina,* for therein lies a significant distinction from Harvard and all other privately established schools.

The Policy Statement says little explicitly but much implicitly about the size and quality of the faculty. As most readers of the *Harvard Medical Alumni Bulletin* are well aware, the fantastic explosion of knowledge in the biomedical sciences, and the increasing ferment regarding delivery of medical care, have essentially dictated that medical faculties everywhere expand and embrace a far greater breadth of interests and disciplines than was necessary 15 years ago. For our School, the result has been like chasing an elusive, rapidly changing target, because our transition from a two-year School to a major Medical Center has occurred during those same 15 years. Dr. Clark Kerr has written of the "frantic race to remain contemporary"; how much more difficult is to stay in the race to stay ahead.

During the decade 1939-49, the faculty of the two-year School increased from about 20 to 40 members. Between 1949 and 1967 the growth has been far more rapid and almost linear. In November, 1967 the full-time Medical Faculty numbered 275, of whom 29 received their M. D. or PhD. degrees from Harvard. The vital part-time Faculty, mainly clinicians who drive up to 50 and more miles to assist with teaching and patient care in the Out-Patient Clinic, has had a roughly parallel growth pattern and now numbers 218.

With so rapid an increase in faculty and a comparable increase in teaching responsibilities, it was inevitable that we would become crowded. We have. By 1962, despite the addition of a valuable new Research Wing, we were bulging at the seams. Soon thereafter the seams burst. Faculty members of all ranks, including some departmental chairmen, are now housed in a virtual trailer camp that has sprung up on the Medical Center grounds. Thus, inadequate space is our present most serious problem. It is, however, also an index of success, as it is clear that we could attract many needed new faculty members if we had room. Indeed, it is heartening that we have continued to add excellent members to our Faculty in recent years; it implies that they share with us a strong faith in the future of the School. Fortunately, new construction already underway or soon to start will approximately double existing space by 1970. And I should explain that this article is *not* being written in a trailer; the author is in his quite comfortable, well-equipped, air conditioned office — recently converted from a ladies rest room.

Crowded or not, our faculty is strong. Many indices could be cited, such as Career Awards and Career Development Awards of the U. S. Public Health Service, Career Investigators of the American Heart Association, Lederle Faculty Awards, Markle Scholarships (11 in the last 15 years), Sinsheimer Awards and election to and offices held in scientific societies. Another index is outside support of research and teaching. During our 15 years as a four-year School, a period during which the faculty grew almost four-fold, outside support of research increased about 21-fold — to 6.5 million dollars last year. As for all medical schools, outside support for teaching has been less available. Nonetheless, its growth at this School during the past 15 years has been huge — to 1.8 million dollars last year.

The Medical School's educational mission relates to seven groups:

(1) Students working for M.D. degrees. The increased numbers since becoming a four-year school is mainly due to the two additional classes, but the graduating class has increased from 63 to 74 in the past two years and the current freshman class numbers 75. About 85-90 percent are residents of North Carolina.

(2) Postgraduate medical students; i.e., nearly 200 interns and residents plus about 60 clinical trainees and research fellows. In contrast to the undergraduate medical students (most of whom are North Carolinians), the house officers, fellows and trainees are a very cosmopolitan group. Many of them elect to practice in North Carolina.

(3) Practicing physicians in North Carolina enrolled in extra-or intramural programs for continuation education. The University of North Carolina School of Medicine pioneered in this vital area when, 51 years ago, it began a series of extension courses for practicing physicians in various parts of the state. These continue — along with seminars held at the Medical School. There is also a statewide weekly two-way radio medical conference, a technique begun some years ago that is becoming increasingly and mutually beneficial to the practicing physicians and members of our faculty who participate.

(4) Students working for graduate degrees in one of the basic biomedical sciences, an exceedingly important group for the future of medical education per se, and for future advances in biomedical knowledge and understanding. This group should grow substantially when, by 1971 or 1972, new construction allows considerable expansion of our pre-clinical departments.

(5) Students in our Schools of Dentistry, Nursing, Pharmacy and Public Health, all of whom are of obvious and increasing importance in any foreseeable scheme of health care, and all of whom receive basic biomedical science instruction from the Medical Faculty. Their numbers are increasing and last year totalled 657.

(6) Students in fields *allied and essential* to medicine such as medical technology, physical therapy, x-ray technology and cytology.

(7) Non-medical graduate and undergraduate students in the University who take courses in one or more of the basic biomedical sciences.

Something more must be said about the undergraduate medical students. The Policy Statement indicates preferential admission of North Carolinians. Since they are more likely than others to become practicing doctors in North Carolina, the policy is important. It is unfortunate that, even with preferential admission to this school, the state's shortage of practicing physicians continues and is, in part, a result of the relatively few North Carolinians who choose to study medicine. Accordingly, one of our major jobs is recruitment. We are trying to do this in several ways. First, we are taking more freshman students; since 1960 the number has risen from about 60 to 75, and (space permitting) we will be accepting 100 a year by 1970. In addition, members of the Admissions Committee visit colleges throughout the State and talk with potential pre-medical students as well as their advisers. Each year, too, an open house is held at the Medical School for interested college students.

Where do our graduates go for postgraduate medical education and ultimately to start their careers? Almost all of our fourth year students have gone on to first-rate teaching internships, mostly in the hospital of their first or second choice. Of those graduating since 1954 — and omitting those still in training or on military duty — nearly 70 per cent are practicing in North Carolina.

Something more should also be said about our house staff. For most of the past decade there have been many more highly qualified applicants than we could accept. Moreover, the interns and residents at this Medical Center account for about one-quarter of all approved — and filled — house staff training positions in the State. We intend to enlarge the Hospital substantially in the near future to provide a larger number of house staff positions and to provide space and patients for medical school classes two-thirds again as large as those of the 1950's and a third again as large as the present first year class.

The curriculum study is not yet complete. Hence, there have not been many major changes in our educational program recently. Nonetheless, several features of the "undergraduate" medical student course and of student affairs generally warrant brief comment.

The Medical Faculty has, by vote, limited the grading of medical students to a single year-end comprehensive examination for each class. Qualitative evaluations during the year will be reported to class advisers and to the Promotions Committee, but will not be translated into grades. Optional *ungraded* quizzes are encouraged to help both students and faculty evaluate progress of a particular course. This policy, which began with the current academic year, has two main objectives: (1) to encourage students to be more responsible for their own continuing education, now and henceforth, and (2) to eliminate examinations as a major activity during the school year and as a basis for motivating study.

Recruitment efforts, already noted, appear to be having some success. One contributing factor may well be the considerable growth, albeit inadequate, of funds available for scholarships and student loans. Another may relate to our excellent student-faculty relationships. Each class has an adviser who remains class adviser for all four years. There is a vigorous and very helpful Student-Faculty Council, made up of all class officers, the officers of the Student Body (known at the Whitehead Society in honor of the School's first dean), the President of the House Officers Association, all class advisers, the Director of the Hospital, the Chairman of the Student Aid Committee, and (as Chairman) the Assistant Dean for Student Affairs (currently Dr. Christopher C. Fordham, 3d '51). This Council meets monthly to consider matters of mutual concern, and thereby promote a healthy environment for students and faculty alike.

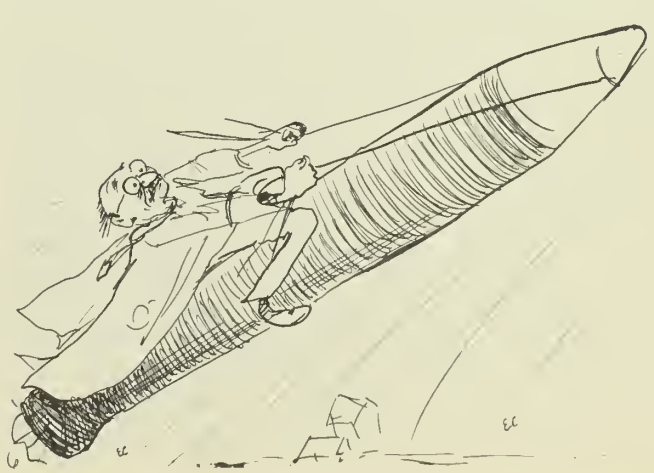
When inviting this article, the Editor suggested "general problems" as one proper topic. Our shortage of space has already been noted, but the truly basic lack is, as everywhere, not space but money. The problem has been stated forcefully by President Nathan Pusey in a recent Annual Report to the Board of Overseers of Harvard University:

> What I have listed . . . are only the *immediate* needs of a single University. Multiplied nationwide by hundreds of institutions larger and smaller, it is clear that in the last third of the twentieth century we shall require huge sums of money, from both public and private sources, for higher education in this country, and this is not an expression of avidity or cupidity. It is simply a sober statement of fact.

Finally, here is what John Adams wrote to Thomas Jefferson on July 16, 1814:

> Education! Oh Education! The greatest Grief of my heart, and the greatest Affliction of my Life! To my mortification I must confess, that . . . education . . . never occurs to me now, without producing a deep Sigh an heavy groan and sometimes Tears.

. . . to stay in the race ahead . . .



Scaife Hall, which houses the Medical School proper.

by F. Sargent Cheever '36, Dean

THE University of Pittsburgh School of Medicine was founded in 1883 as the Western Pennsylvania Medical College, a proprietary institution. Its first affiliation with the University was established in 1891, and some 15 years later the original owners were bought out. In 1908, the school became an integral part of the University of Pittsburgh. It occupies the greater part of Alan Magee Scaife Hall (built in 1957) which houses some of the functions of the Schools of Dentistry, Pharmacy, and Nursing. A connecting wing joins it to two (Prcsbyterian-University and Eye and Ear) of the four affiliated hospitals comprising, with the University of Pittsburgh, the University Health Center of Pittsburgh. The other two independent but affiliated hospitals are Magee-Womens and Children's; the former is five blocks away while the latter is connected with Presbyterian-University Hospital by tunnel and elevated bridge. Western Psychiatric Institute and Clinic (operated by the University of Pittsburgh under contract with the Commonwealth of Pennsylvania) and the Graduate School of Public Health are across the street.

The original purpose of the School was to train general practitioners for Western Pennsylvania, the area from which the overwhelming majority of its students were drawn. Classes were relatively small (approximately 80 at entrance as late as 1945.) Financial support was derived from tuition, income furnished by a small endowment, general University revenues, and more recently, an annual appropriation from the Commonwealth of Pennsylvania. The clinical departments were staffed almost entirely with part-time faculty. Research activities were limited.

In the year immediately following the close of World War II, the development of the Pittsburgh Renaissance had its effect on the School. The recruitment of full-time faculty in thc clinical departmcnts was started, and following a generous gift of $15,000,000 in 1955 from scveral Pittsburgh Foundations associated with the Mellon Family, the process was accelerated. The formation of thc University Health Center of Pittsburgh in 1965 regularized the

School's relations with its independent yet affiliated hospitals. The basic principle is the requirement that (with certain exceptions) appointment to the active staff of each of these hospitals requires a prior appointment to the Faculty of Medicine. An active Dean's Committee has developed effective working arrangements with the nearby Veterans Administration Hospital (G. M. and S.). In addition, effective working arrangements in specialized professional areas have been implemented with several community hospitals — notably Montefiore.

Today the size of the entering class has been increased to 106. Approximately 80 percent are Pennsylvania residents; although there are no formal geographical restrictions, the reduced tuition for Pennsylvania residents (financed by the Commonwealth) makes it unlikely that this percentage will drop appreciably in the foreseeable future. The percentage of female applicants (both total and accepted), has remained surprisingly constant at the 8—10 percent level for some years. Full-time faculty members total approximately 370, giving a faculty-student ratio of close to 1:1. In addition there are nearly 700 part-time faculty members. The faculty is well-laced with Harvard graduates as witness A. B. Ferguson, Jr. '43B (Chairman, Department of Orthopedic Surgery), H. T. Bahnson '44 (Chairman, Department of Surgery), D. N. Medearis '53 (Chairman, Department of Pediatrics). There are others who received training in hospitals affiliated with Harvard, such as J. D. Myers, Peter Bent Brigham Hospital and Thorndike Memorial Laboratory (Boston City Hospital), Chairman of the Department of Medicine. Prominent among former HMS faculty members is Ernst Knobil, Ph.D., Chairman of the Department of Physiology. All the major departments have at least a core of full-time senior faculty members. The basic endowment of the School is close to $28,000,000, and the annual budget approximately $12,000,000, of which slightly over half represents sponsored research.

The general problems facing the University of Pittsburgh School of Medicine are those facing other medical schools; curriculum, financial support, functional ties with the rest of the University leading to collective action, relations with affiliated hospitals, and responsibilities to the community.

Both students and faculty have become increasingly dissatisfied with the traditional curriculum in recent years, feeling that it has fallen far short of meeting the demands imposed by modern medicine. Following several years of study and planning, a markedly revised curriculum was introduced in the fall of 1967, designed to prepare physicians to meet the health needs of the future. The four important characteristics of the new curriculum are the provision of (1) integration of traditional basic science and clinical subjects to make them more meaningful to the student and compatible with present knowledge that recognizes them as integral parts of a whole rather than isolated disciplines; (2) large amounts of unscheduled time for student self-directed study; (3) laboratory and clinical experiences directed at problem solving by scientific methods; and (4) a fourth year devoted to study in special areas of the student's own choosing. Throughout the curriculum every effort will be made to place the student in close contact with his teachers through seminars, tutorials, and individually directed special studies. The new curriculum attempts to break the lock step and standardized progress of the student through his four years; the hope is that it will prepare him to incorporate and utilize new knowledge as the latter unfolds throughout his professional career. Its implementation is placing heavy demands on the faculty.

Although the School receives generous support from the Commonwealth of Pennsylvania (approximately $5,000 per student at the present time), the rapidly increasing costs of medical education present major difficulties. Significant accretions to endowment are achieved slowly, and, for a variety of reasons, tuition income (presently at the rate of $1500 per student) is not likely to rise sharply in the foreseeable future. Curtailment of Federal funds for education, research, and training and for construction of new facilities has given rise to grave problems, particularly in the face of the need for major expansion of the physical plant for the teaching and research activities of the basic medical sciences.

Although the Medical School is situated in close juxtaposition to schools of the health professions — Nursing, Pharmacy, Dentistry, and Public Health — and the main part of the University is within easy walking distance, it has tended too much to stand apart. The Graduate School of Public Health is the exception to the rule, but even here the potential opportunities for collective action have not been exploited to a great extent. Differing goals, standards, and operating philosophies have led to an atmosphere of passive goodwill, rather than to one of active cooperation at points of mutual interest. To date, the possibilities of integrated action with the other units of the University have not been taken advantage of by the School of Medicine.

As at Harvard, each of our affiliated hospitals is an independent legal entity, with its own board of trustees. There is some interlocking with the University's Board of Trustees through individual trustees who serve on more than one board. All of these institutions started as community hospitals and as such made commendable records. Their union with the University in the University Health Center of Pittsburgh marks their intellectual decision to approach the ideal of the teaching hospital academically oriented toward the University. The emotional, financial, and administrative obstacles to achieving this are legion — even with the best of intentions on the part of all participants.

Finally, there is the future role of the School of Medicine to consider in relation to some of the pressing community health problems of our time — the wise and effective use of health manpower, the reduction of the gap between medical knowledge and its application, the use of modern systems concepts in planning for and delivering medical care, and the development of new knowledge concerning the influences of the physical and social environment on man's health. Programs such as the Western Pennsylvania Regional Medical Program and Comprehensive Health Planning for the same area are prime examples of opportunities to develop solutions for some of these problems, as is the planning and implementation of comprehensive care programs for defined population groups. The challenge to us is to find how to move most effectively into these new areas so necessary for training the physician of tomorrow and for advancing the cause of medical science.

LEWIS'S ADVENTURES UNDERGROUND

In Which I Discover the TRUE NATURE of SOLUTIONS

by Charles E. Lewis '53

I settled in my chair. . .

Dr. Lewis is professor and chairman of the department of preventive medicine and community health at the University of Kansas Medical Center.

THE chairman tapped his pencil to call attention to himself and the importance of the meeting. "Gentlemen, let's begin. You'll note that the first item to be considered is a continuation of a discussion from last week's meeting. At that time debate was suspended on the question as to whether or not student toilets would be locked during examination periods. I'd like to get this matter settled so that we can get on to the reports from the Committee on Medical Care Research."

I settled in my chair and watched as the students' toilet privileges became the shuttlecock in a game of intellectual badminton between two members of the committee. I tried to gauge the probable length of the impending discussions so that I could successfully program myself for a period of completely detached concern. As a boy I discovered that I possessed certain atavistic survival instincts that permitted me to appear to be attentive and interested, while slipping into a dream-like state in which I could either contemplate problems of a personal nature, or escape into a never-never-land of fantasy. The ease of the maneuver disturbed me, and I had once considered for a few seconds the advisability of psychiatric consultation. Common sense, however, suggested that I not tamper with or change a successful and enjoyable game, regardless of its psychological implications. Therefore, I proceeded to formulate papers, outline lectures, or merely let my imagination range during most of the many committee meetings that seem to be the primary reason for the existence of institutions and organizations.

On this particular occasion, I was exhausted from wrestling with the problems of comprehensive health care, and other equally perplexing issues. So I decided to treat myself to an excursion into the twilight zone. Setting the psychic alarm for approximately 15 minutes, I rapidly slipped into a world of yesterday and began rummaging back through interesting past experiences looking for a suitable theme about which to improvise variations.

I found myself thinking about the "good old days" (a sure sign of too many committee meetings). I wandered backwards out of academia, the community, and into the world of bench research, and envisioned a lab where I had happily pursued the metabolism of amino acids, many, many years ago. As I stepped into this laboratory a feeling of nostalgia escaped me. The benches, reagent bottles, and high ceilings were there, to be sure, but something, something that I could not yet identify, had changed. There were several technicians working busily at the various benches of the room; the chief investigator sat at his desk near the doorway where I stood.

"Good afternoon," he said, "can I do something for you?"

"No, not particularly, I just stuck my head in to see what was going on, I hope you don't mind."

"No, that's all right. Because of the nature of the research which goes on here, we're accustomed to having frequent visitors. I'd be glad to show you around if you wish."

"Thanks, I'd like that."

"Let's step over here to one of our more sophisticated projects," he said. "I thought for a minute you were one of the leftovers from the site visit team that was through here yesterday."

"No," I said, "I'm afraid I'm not an expert in this field, so I wouldn't qualify."

"Well, I'd be glad to answer any questions that you may have."

"Exactly what is this young lady doing?"

"Well, right now she's getting ready to perform one of

our current series of experiments."

"What is she doing with the tweezers? She seems to be sorting out some of the particles of the material in that jar!"

"She is, she's counting out 1000 of the units of the substance that we are going to dissolve."

"I see," I said, except I didn't.

"This is one of our larger experiments, we're going to make a 1000 units solution, or try," he said as he smiled.

"I'm sorry I don't understand," I said. "You mean she is going to count out 1000 of the little particles of this material?"

"Yes," said the scientist, with a note of suspicion creeping into his voice.

"And how will you dissolve it?"

"Well," he said, with a note of indulgence, "we will dissolve it in 100 drops of solvent.

I looked at him, showing my ignorance. "You mean — this is what she does all the time?"

"Yes," he replied crisply. "This is what she does — this is what the laboratory is here for. Perhaps I'd better remind you this is The Laboratory for Advanced Study of the Characteristics of Solutes and Solvents. We are engaged in some sophisticated studies of the parameters that regulate the interphases of solvent systems."

Oh," I said, "and the other girls. . .?"

"They are working on other problems. This one is making a ten particle solution. That one is. . ."

Suddenly I became aware of one of the things that *was* different about the room. While there were many bottles of powdered reagents and liquids — there were no balances or scales.

"Why don't you just weigh out the material?" I asked.

"Weigh?" he said, "weigh with what?"

"With a balance" — I decided to be more explicit. "With something that measures the relative mass of the material that you are trying to dissolve."

He looked at me with dismay, "I am afraid that we are talking past each other," he said. "I am not aware of the terms that you use."

"How," I asked, "do you measure the quantity of any material that you dissolve?"

"Why, obviously, according to the numbers of units or things that we can count," he said. "After all, we must be quantitative. This is a scientific laboratory."

"And do you measure the liquids in which you dissolve this material, in terms of their volume?"

He stared at me with more than a little concern. "Again, the term escapes me. Perhaps it is in the foreign literature, but everyone knows the way we currently measure the amount of solvent is according to the number of drops used. We *must* count, and measure things accurately."

"But," I asked, "what about using materials that have particles or units of different sizes. Does this trouble you?"

"Aha," his face lit up, "you have now touched upon one of the more critical problems in our research."

I started to inject another question, but he had warmed to the subject.

"Of course, we know that not all of the units we count are equal. Some are big, some are small, some are green, some are purple. We also suspect that among the kinds of solvents we use, some drops are bigger than others. However, at present, our focus is upon counting the numbers of things involved, and putting them together to see if they dissolve. We are also aware of the fact that certain of these solvents are, to use a recently coined term, polar or non-polar, depending upon configuration of the subunits making up the pieces or units that we count. You see, we have a great many theories about how things work in this field, but right now we are dealing with some very fundamental problems."

I interrupted, "Let me guess how you measure distance in your laboratory experiments. You line up the number of particles necessary to go from one point to another, and then you count them."

"Exactly!!" He had a new respect for me now.

"And do you also concern yourself with the amount of time that it takes for the solution to occur."

"Naturally," he snorted, somewhat offended. "Thanks to a large grant, we have equipped all of our laboratories with the most accurate devices possible for measuring time."

As he reached into the cabinet I had a strong premonition of what I would see. He withdrew an enormous hour glass.

"This," he said, "contains exactly 10^7 particles ($\pm 0.5\%$). It is an officially certified chronometer."

I said, "I suppose the standard unit for measuring time is the period it takes for all of the units in that thing to go from one end to the other."

"Precisely."

At the risk of being rude I decided to press on with other questions. "How do you know that these things have actually gone into solution?"

He looked at me and his face fell. "You are now touching upon a serious problem. We have applied for another grant. In the beginning we used to shake them up and measure the time that it took for cloudiness to disappear. By accident one night during a power failure someone held a flashlight up to a solution and we saw tiny particles or units still in suspension. In other words, they had not become part of the solution system. To be very honest, there is some debate about how to determine the end point for solutions."

. . . she's getting ready to perform one of our current series of experiments. . .

"Wait a minute," I said, "didn't you say the whole purpose of your research was to study the characteristics and parameters of solutions?"

"That is correct," he said. "While we are extremely advanced, it is unfortunate that we lack certain criteria for standardizing end points."

"It seems to me," I said, "that you lack more than criteria for end points." As his face reddened, I decided not to tell him what I thought he really lacked.

"How do you know that your research is any good?"

"Well," he said, "we have several ways of determining this. We are studying solutions in a comprehensive fashion. We are dissolving particles of almost every color and shape into every type of solvent known to man. We are studying the number of things, and how they relate to numbers of drops of solvent, the numbers of grains of a standard substance that must run through the glass tube before a solution occurs, etc. We are accumulating a tremendous amount of data and, I might add that it is all publishable, and this is one of the ways that we can tell that we are successful. We continue to get more grants, and we continue to publish more articles."

"Isn't there any other way that you determine the value of your research?"

"Oh, the value," he exclaimed, "of course. Every day the Scientific Accounting Office sends us a statement that indicates the numbers of dollars we have spent on developing solutions. So far this year we have managed to spend 50 percent more dollars and created 60 percent more solutions than last year."

"Then the amount of money that is actually being spent for your activities, is itself a measure of the success of your program?"

"Of course," he replied. "We were the first to introduce the concept of cost-effectiveness in our field."

"I have only one more question." I asked, "What do you do with all of the solutions you produce? What is the purpose of all of this?"

"Well," he said, with disdain, "first of all, I am not sure that any scientific research needs justification; we are engaged in basic research. People need solutions," he said, "think of all we don't know about solutions, the relationships between the numbers of units to be dissolved and the numbers of drops of things to put them in. If you don't think our research is complicated let me show you some of the calculations." He flashed a sheaf of papers with mathematical equations. He handed me a large volume, which I recognized as a computer printout of an enormous matrix which had been inverted several times.

"Here," he said, "here are some of the reprints from our laboratory last year."

I glanced quickly at their titles: The Philosophic Nature of Solutions; On The Relationship between Drops and Pieces; The Impending Crisis in Finding Solutions; A Mathematical Model for Mixing Multiple Solutions, etc.

"I am currently working on a paper to promote the graduate training of more technicians in this field — there's a terrible shortage," he said. "I'd be glad to tell you about this. . ."

"No thank you," I said, as I felt my psychic alarm ringing, "I must be leaving but I have enjoyed seeing your laboratory very much. You are to be congratulated, . . ."

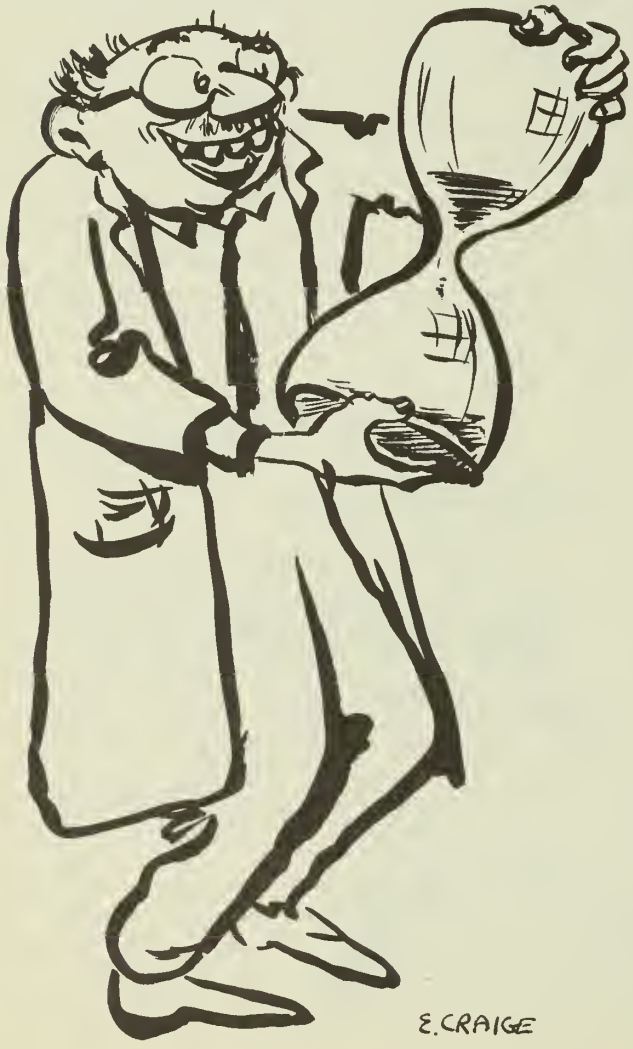
"And I repeat, in summary, that if we do not lock the doors the students will hide crib notes in unimaginable locations." I leaned forward and raised my hand. The chairman nodded at me. I said, "Why don't we just give the examinations in the toilets?" There was a violent nodding of heads indicating that I had returned just in time to provide a solution commensurate with the problem.

As we turned to the more pressing business of the problems of organization and delivery of health services, I had a slight twinge of pain as I remembered my dream. Those poor clods, I thought. They were so busily engaged in research, but for some reason or another they never discovered, or were even aware of their need to define the concepts and units of measurement of mass, distance, and time. Since they had not defined these, they would be unable to develop secondary units with other dimensions, such as temperature, energy, etc., so essential for fundamental work in their field.

I smiled as I thought of the crudeness of their tools, the intensity of their desire, and their interesting speculations. What a fascinating and unusual world, I thought. They apparently will have to discover basic units of measurement by deduction, after developing general theories, instead of first defining the basic units or dimensions needed for measuring the specific, and then inductively reasoning about the general nature of things.

The chairman looked directly at me — "And now, what's new in Health Care Research?"

He withdrew an enormous hourglass.



HARVARD MEDICAL SCHOOL ANNOUNCES

The William O. Moseley, Jr.

Travelling Fellowships

THE BEQUEST OF JULIA M. MOSELEY MAKES AVAILABLE FELLOWSHIP FUNDS FOR GRADUATES OF THE HARVARD MEDICAL SCHOOL FOR POSTDOCTORAL STUDY IN EUROPE.

The Committee on Fellowships in the Medical School has voted that the amounts awarded for stipend and travelling expenses will be determined by the specific needs of the individual.

In considering candidates for the Moseley Travelling Fellowships, the Committee will give preference to those Harvard Medical School graduates who have—

1. **Already demonstrated their ability to make original contributions to knowledge.**
2. **Planned a program of study which in the Committee's opinion will contribute significantly to their development as teachers and scholars.**
3. **Clearly plan to devote themselves to careers in academic medicine and the medical sciences.**

Individuals who have already attained Faculty rank at Harvard or elsewhere will not ordinarily be considered eligible for these awards.

There is no specific due date for the receipt of applications or for the beginning date of Awards. The Committee will meet once a year in January to review all applications on file. Applicants will be notified of the decision of the Committee by January 31. The Committee may request candidates to present themselves for personal interviews.

Application forms may be obtained from, and completed applications should be returned to:

Secretary, Committee on Fellowships in the Medical School
Harvard Medical School
25 Shattuck Street, Boston, Massachusetts 02115

EDITORIALS

Homo Sap

Dr. Eisenberg's address, published elsewhere in this issue of the *Bulletin*, supports the thesis that social intelligence, within the natural limitations of the species and the individual, develops as a result of environmental influences that direct its shape and determine the rate and extent of its progress. The individual's eventual type and degree of intelligence, far from being prescribed from the moment of conception, like a flower bud perfectly formed in miniature and needing only to be unfolded by favorable environmental influences, is at the start a shapeless matrix; the formative cells from which the final structure grows, if given the opportunity. Heredity provides that basic substance; environment is responsible for the end result.

The failure of qualified material to develop to a practicable degree is greatest in the nations that are themselves underdeveloped, and the same handicap applies in the blighted areas of our own culture, such as it is. A comparable handicap is shown in the inability of animals to develop both physically and mentally under unfavorable circumstances. In experimental embryology, it is shown in the failure of a crystalline lens to form if the optic cups are removed prior to this formation. Monkeys reared in isolation fail even to acquire the technics of copulation.

Human infants are especially handicapped because they are the most immature of all animals at the time of birth, being required to follow a long and hazardous road to reach mature development in mind as in body. In order for them to traverse this path creditably the environmental influences must be effective. The risk encountered by institutionally reared infants is recognized, for they may become irreversibly retarded if the institution is inadequate for their needs. Moreover, "rescue" has to come early in life to avoid this irreversibility; our efforts, nevertheless, must never cease as the individual grows older.

In our own land where the caste system is more firmly entrenched than many persons would admit, the blacks, the American Indians, the Mexicans and the Puerto Ricans are at greatest risk. We pay a high penalty for our neglect of the offspring of these disadvantaged populations, and the penalty becomes cumulative. We must recognize the indispensability of unrestricted group activities, implying "a craving by each individual for response from his social environment, a craving as fundamental as that for food."

"Sapiens," Dr. Eisenberg suggests, is a lop-sided characterization because of its frequent application rather to man's technological capacities than to the development of his social intelligence. This one-sidedness may be due to the "rapid growth of state-supported schools in response to the manpower needs of industrialization." Such a materialistic selection is in line with the fact of varying customs and values. "To the Eskimo, the striking of a child was unimaginable; to California Indians, the very concept of war was incomprehensible." Regardless of Freud's opinion, "aggression is no more ubiquitous than is generosity."

The idealism of youth, according to Eisenberg, "represents the greatest asset for a better future. . . .We have been too ready to make our peace with existing evils." Today's obstacles to improved human development, he believes, are first, the Vietnam war with its "futile effort to combat ideas by killing people who do, or might adhere to them." The second obstacle is racism — the toleration of prejudice based on a "spurious sense of superiority," and the third "gross inequalities in access to resources within nations and between nations."

One may accept Dr. Eisenberg's thesis wholly or in part but one can scarcely question the soundness of his belief that "the resources now hoarded by the few must be used with generosity for the benefit of all, if any are to survive."

"Ultimate Concern"

How ludicrous it would be to celebrate the season of Christmas this year with falsely mouthed sentiments of peace on earth and good will towards men. In our troubled, desperate hours of war in Vietnam, with hundreds of men on both sides being killed weekly; with racism slashing our see-through curtain of democracy; with thousands dying of starvation in Biafra; and with freedom being flaunted in Czechoslovakia, hope surely does not spring eternal.

As we look around, we are quite likely to wonder if it springs at all. But if it does not, what is left but apprehensive despair? Such despair negates one of man's most basic attributes and causes much that is good in him to stagnate.

To hope for a better condition is to strive for it. One realizes that the task is monumental; one that no human being could effect alone. Yet in the striving, man attains a measure of greatness and lacking it, demeans himself.

The immediacies of the human problems confronting us impinge with increasing urgency. If the attempt is not made soon, it is likely that there will be no need ever to make it.

As we celebrate the birth of the Christian Savior, whose gospel was one of peace, brotherly love, and infinite understanding, perhaps it would be well to reconsider our values and modify or reaffirm them.

Years ago the poet, Robert Bridges, expressed the thought eloquently: "Our hope is ever livelier than despair."

The *Bulletin* wishes its readers a Happy Christmas and a Hopeful New Year.

ALONG THE PERIMETER

Orientation: A Smorgasbord of Ideas and Impressions

Curriculum changes at HMS made a more elaborate student orientation program desirable. The week of September 16 to 20 unveiled the aims of medical education to the class of '72, the first group to participate in the new curriculum. In the words of Dean Robert H. Ebert, "the purpose of orientation is to provide a smorgasbord of ideas and impressions."

Orientation opened with registration on Monday September 16. At this time, representatives from Student Affairs, the Health Services, and the Admissions Office set the tone for the week ahead.

Dr. Samuel Bojar, psychiatrist to the University Health Services, spoke of the comprehensive health care program available to students. HMS policies and philosophies were expressed by Dr. Joseph Gardella, associate dean for student affairs. Dr. Gardella said that the faculty is concerned only with helping individuals achieve their maximum potential. Each student is expected to channel his energies into the fulfillment of a highly individualized program, without worrying about relative performance. The students were also warned that an early start to defining interests is the first step toward the in depth studies that form such an integral part of the new curriculum.

Perry J. Culver '41, associate dean for admissions, presented the Class of '72 profile. A total of 126 students (111 men and 15 women) were chosen from 1421 applicants. The accepted class members come from 31 states and Puerto Rico, as well as from Canada, West Germany, Turkey and Tanzania. More class members are from New York, Massachusetts, and New Jersey than from any other states. Harvard, Yale, and Princeton are the undergraduate colleges having the largest representation in the Class of '72. Thirty-two of the accepted applicants are sons of physicians: ten of these are sons of HMS graduates.

The second half of Monday morning was devoted to addresses by Dean Robert H. Ebert and Dr. Alexander Leaf, curriculum committee chairman and Jackson Professor of Medicine at Massachusetts General Hospital.

In his welcoming address, Dr. Ebert enumerated the factors that precipitated curriculum changes and the implications that this new approach holds for students. Three twentieth century revolutions are responsible for marked medical developments. These three revolutions are in science, technology, and social attitudes.

The Scientific Revolution:

Progress in infectious and cardiovascular diseases reflects scientific development's impact upon medicine. The principle of antibiosis was the forerunner to the control of infectious diseases and physiology provided the basis for understanding cardiovascular disease. Advancement in these areas is the product of developments that preceded today's new biology. The full impact of specialties such as molecular and cellular biology is yet to be realized. The rapidity of scientific discovery increases the obsolescence of medical knowledge. It is no longer possible for doctors to learn a static body of knowledge. It is the approach to problems and the reasoning this involves that is important.

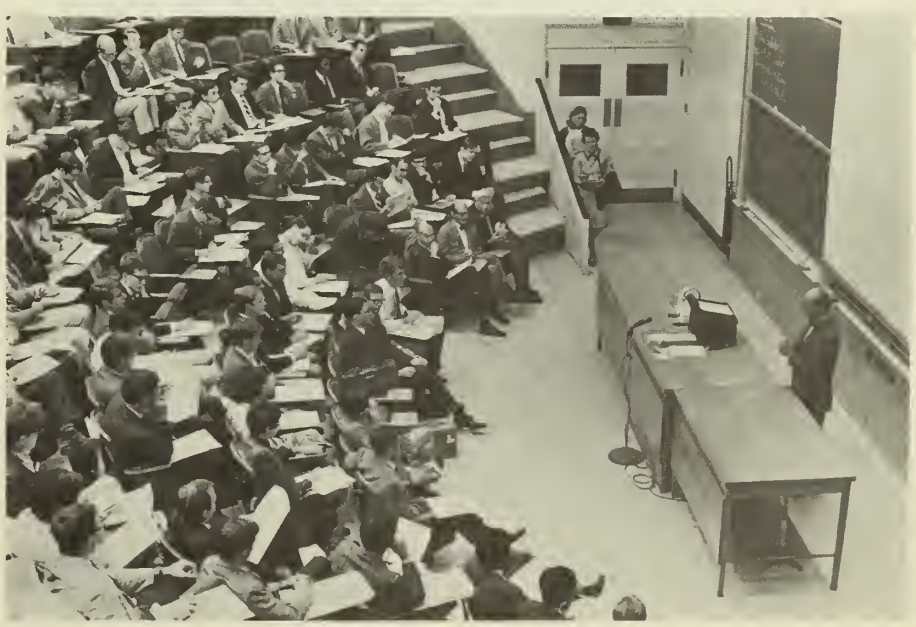
The Technological Revolution:

The revolution in technology has created a situation that demands re-evaluation of the medical purpose. Products of the technological revolution such as population shifts, mass education, and an obvious contrast between the rich and the poor alter concepts involved in the delivery of medical care.

The Social Revolution:

Dr. Ebert emphasized society's changing attitude towards health care. "By most people it is considered as a right and not a privilege." This attitude is reflected in the manner in which health care is delivered to the poor. Charitable institutions that perpetuated the two class system, have been replaced by governmental programs created by the recent onslaught of social legislation. Medicare, for example, with the absence of a means test, facilitates the extinction of a two-class condition.

Dr. Ebert addresses the Class of '72.



Medical education must keep pace with changes in the character of medicine. Dr. Ebert mentioned five concepts that molded medical curriculum in the post World War II era.

1. Inability to teach everything in four years.
2. Necessity of integrated teaching.
3. Role of social factors in illness.
4. Importance of the patient as an individual.
5. Conviction that medical school is not a conclusion to medical education.

Today, medical schools must recognize that students have varying backgrounds and will pursue different careers. The University must become involved in the definition of problems that are the products of the scientific, technological, and social revolutions. Medicine offers a neutral area that can provide an entry into the problem and possibly a solution. Dr. Ebert challenged students to prepare to be participants in a changing world, to accept their unique opportunity to make a substantial social contribution.

Dr. Alexander Leaf discussed the new curriculum's aims and how these aims had been molded into a workable program. He also presented the probable effect that the new approach would have on faculty members and teaching methods. (HMAB, Spring, 1968).

The rest of the day was given over to testing. The revised curriculum allows students who exhibit a certain understanding of the biological science basis of medicine to replace required courses with electives.

On Tuesday morning William B. Castle '21, Francis Weld Peabody Faculty Professor of Medicine, Emeritus, delivered "Blood is Harvard Crimson" to the class of '72. Dr. Castle opened his talk with an amusing historical account of HMS. He emphasized the strides that have been made in medicine and medical education since the founding of HMS in 1783. Dr. Castle then turned to a survey of developments in hematology, paying special attention to anemia. Medical knowledge, said Dr. Castle, is most often the result of many simple observations and not the product of miraculous discoveries involving highly sophisticated techniques and specialized knowledge. The gradual construction of a body of facts necessitates working from the patient to the molecule and not from the molecule to the patient.

Herrman L. Blumgart '21, professor of medicine, Emeritus, introduced students to their first clinic. Dr. Blumgart's intention was to acquaint students with procedure. They were instructed to view themselves as participating doctors and not as an audience. In clinic, students must display a knowledge of both the patient and the disease: if they don't know both they can't know either. It was firmly impressed upon the minds of students that all information divulged in clinic is confidential. Information belongs to the patient and must not be material for conversation. The students were attentive throughout and responded to the responsibilities inherent in attendance at clinic. Dr. Blumgart successfully brought students out of a passive state into an active and critical one.

Dr. Blumgart surveyed the historical development of the condition studied, made excellent use of audiovisual aids, and presented two case studies. The students listened eagerly as they experienced their first exposure to clinical medicine.

Tuesday afternoon's program included testing, tours of the Francis A. Countway Library of Medicine, and departmental open houses. Open houses were held by the departments of anatomy, bacteriology, biological chemistry, neurobiology, pathology, pharmacology, and preventive medicine. Each open house presented a lecture on current research, allowed examination of experimental apparatus, and provided an opportunity for informal discussion with faculty and staff.

Wednesday was devoted to the symposium: "Careers in Medicine." Francis D. Moore '39, Moseley Professor of Surgery and head of the department at the Peter Bent Brigham Hospital, acted as moderator. Dr. Moore described the symposium as a tour through "the many mansions of medicine." The morning participants were Dr. Bernard D. Davis, Adele Lehman Professor of Bacteriology and Immunology; Dr. Leon Eisenberg, professor of psychiatry and head of the department at MGH; Dr. John H. Knowles, General Director, MGH; and Dr. Jerome B. Weisner, Provost of M.I.T.

Dr. Davis advocated the establishment of a combined M.D.-Ph.D. degree program. He feels that medical research has become so specialized that the M.D. degree is no longer adequate as a basis for a career involving a substantial amount of research. He envisions a program that would lead to a double degree or a choice of degree after the first or second year. Dr. Davis feels strongly that there is a definite need for both M.D.s and Ph.D.'s in the medical profession. He pointed out that Ph.D.'s and research people need special qualities such as fortitude, determination, and imagination. The M.D. is more likely to be able to assess his achievements at the end of each day than the researcher who might carry on his work for months with little evidence of results.

Dr. Eisenberg examined medicine's role in the alleviation of adverse social conditions. He put forth the view that medicine could help find answers to such twentieth century problems as the population explosion and racism. The speaker made good use of charts to support his thesis that where medical care is better and more available there seems to be less social strife.

Dr. Knowles explained his role as hospital administrator and his engagement in a constant effort to maintain a balance between such groups as politicians, patients, doctors, and nurses. He related a typical day at work, a day that would send shudders down the spine of any over-wrought business executive.

Provost Weisner sees a definite need for cooperation between medicine and technology to improve the human condition. HMS and M.I.T. are already collaborating in a program that permits fuller utilization of both institutions' resources. Any such mutual undertaking offers distinct benefits to both medicine and technology. (See HMAB, Fall 1967).

The medical careers symposium continued in the afternoon. Talks were given by Franklin A. Neva, John LaPorte Given Professor of Tropical Public Health, HSPH; Dr. Dieter Koch-Weser, associate dean of the Faculty of Medicine for international programs; Claude E. Welch '32, clinical professor of surgery; and Charles A. Janeway, Thomas Morgan Rotch Professor of Pediatrics and head of the department at the Children's Hospital.

Dr. Neva developed the position of

public health as it related to medicine. He sees public health as a philosophy or a way of looking at things and not as a specialty. In public health the function is primarily preventive and the patient is the community. Dr. Neva went on to survey public health's historical development. Public health grew out of a collaboration between scientific knowledge and engineering. The focus has changed from the original emphasis on communicable diseases, waste disposal, and sanitation to concern for such things as health care to the disadvantaged, population problems, and control over nuclear waste. Today, public health has so many components that an interdisciplinary approach is demanded. Students interested in this field were advised to get their medical education first and then go on to specialization.

Dr. Koch-Weser discussed opportunities in international medicine. He emphasized the fact that there is no such thing as a career in international medicine. Activity in this area must be based on some type of specialty. Dr. Koch-Weser went on to describe the many programs that have been established in the underdeveloped world for the promotion of health science and medical activities.

Dr. Welch examined the physician's many commitments and recommended how students might best prepare themselves to meet these commitments. The doctor's primary concern with the individual patient's well being was pointed to as an enjoyable and rewarding experience. Mention was made of the legal procedures to which dissatisfied patients may have recourse. Dr. Welch predicted that there would be an increasing amount of government action in the medical arena. Regardless of personal feelings, the students were told that they must accept the fact that "the fellow who pays the piper is going to call the tune." If they are to anticipate the consequences of ever increasing government control, American doctors must look to foreign medicine. Two of the dangers that must be guarded against are the curtailment of intellectual freedom and the tendency of measuring the success of medical programs on a solely economic basis. In time to come, hospitals will be the central focus. When people are administrated, stresses and strains are inevitable. Physicians must cooperate with administrators if any headway is to be made. If doctors are to influence future medical developments they must recognize their responsibilities toward both professional and specialty organizations. It is the special responsibility of doctors to support medical education both by entering the teaching profession and by providing financial backing. The students were told that they must start planning now if they are to successfully meet these obligations. In making plans, students must be aware of three considerations.

1. It is desirable to acquire a general knowledge of the many branches of medicine through the wise use of electives. The student with the wide view is better equipped to make a personally satisfying career choice.
2. Medical knowledge is essentially out of date within five years. Continuous medical education is a necessity.
3. Every medical field is extremely fluid and physicians must be prepared "to roll with the tide." This includes paying attention to social and governmental activities as well as medical advances.

The final speaker, Dr. Charles A. Janeway examined the general practitioner's inability to meet the demands of modern medicine. Dr. Janeway began with a profile of the old-time g.p.: a benevolent, elderly gentleman who knew everything about everyone. The g.p., with notable exceptions, was at the bottom of his medical school class and delivered an inferior brand of medicine. He is now a folk hero, a casualty of science and technology. Today physicians enter specialties and cluster around the hospital. There is a deep seated public dissatisfaction with medical care. Foreign countries with fewer resources and fewer doctors have excelled the U.S. in delivery of health care. Now is the time to experiment with different health care patterns. We must mold a system that is beneficial to both doctors and patients. Dr. Janeway believes that the "family practitioner" system is a step towards the realization of this goal. There are three essential traits of the "family practitioner."

1. He is family oriented and community supported.
2. He promotes the health of the individual, but is also concerned with the disease.

During one of the Tuesday afternoon open-houses, Dr. Jean-Paul Revel, associate professor of anatomy, tells students about the electron microscope.

3. He assures continuity in health care by treating his patients over an extended period.

It is the central focus that makes family medicine more desirable than specialization. The specialist is concerned with the disease itself and it can only be hoped that he cares for the patient. Family medicine, on the other hand, is centered on the patient who happens to have a disease. It is likely that family medicine will involve teams of doctors, sociologists, psychologists and other professionals working towards a common goal.

Thursday was given over to visits to several teaching hospitals. In the evening the class of '72 participated in a discussion with HMS upperclassmen.

Orientation week concluded on Friday with a symposium: "Medical Missions Unfulfilled." This final event was moderated by Dr. Leona Baumgartner, visiting professor of social medicine. The participants included Henry K. Beecher '32, Henry Isaiah Dorr Professor of Research in Anaesthesia; Howard H. Hiatt '48, Herrman Ludwig Blumgart Professor of Medicine; and Dr. Seymour S. Kety, professor of psychiatry at MGH.

Dr. Hiatt, the first speaker, dealt with unfulfilled missions in the realm of physical disorders. Before discussing unfulfilled missions, Dr. Hiatt gave examples of missions fulfilled by the deductive and empirical processes. Advances in understanding sickle cell anemia were arrived at through deduction. The oxygen — carrying protein in the sickle patient is rendered abnormal by an amino acid change. Sickle cell anemia is still only a partially fulfilled mission and will remain so until the translation of the genetic code can be altered. Dr. Alexander Fleming's work with penicillin is a mission fulfilled by the empirical process. Dr. Fleming observed molds and saw the results of penicillin before the elucidation of the mechanism of action. Dr. Hiatt illustrated the impact of fulfilled missions by comparing the major causes of death in the U.S.A. in 1900 and 1960. In 1900 pneumonia, influenza, and TB were the major killers. Heart disease, cancer, and cerebral vascular accidents topped the list in 1960. Between 1900 and 1960 medical knowledge successfully reduced the fatal consequences of infectious diseases. Dr. Hiatt named seven areas where medical science still has a mission to fulfill.

1. Methods of tissue transplantation.
2. Design of artificial organs.
3. Regeneration of organs.
4. Treatment of viral diseases.
5. Chemical and immunologic treatment of cancer.
6. Inhibition of the aging process.
7. Identification and correction of genetic disorders such as gout, diabetes, and anemia.

Dr. Hiatt feels that fulfillment of these missions requires a definite approach. This approach would have to include continuation of basic research, application of the fruits of research to clinical problems, application of engineering sciences to clinical sciences, and making available to all people the means for treating disease.

Dr. Baumgartner followed Dr. Hiatt with an analysis of the delivery of health care services in the U.S. She maintained that the many resources of American medicine were not utilized so as to best satisfy human needs. A comparison between U.S. economic and health systems illustrated the speaker's stand. The economic system contains three major groups: consumers, entrepreneurs, and institutions (banks, taxes, etc.) A constant interplay is carried on between these three groups. Each group must respond to the changes in society that put pressure on the economic system. Three comparable groups may be identified in the health system: patients, entrepreneurs (doctors, nurses, etc.) and institutions (hospitals, clinics, and schools). In the health system there is little interplay between institutions. Medical personnel do not consider patient needs as carefully as manufacturers analyze consumer demands. Dr. Baumgartner concluded by enumerating nine factors that should influence the type and quality of health care services delivered.

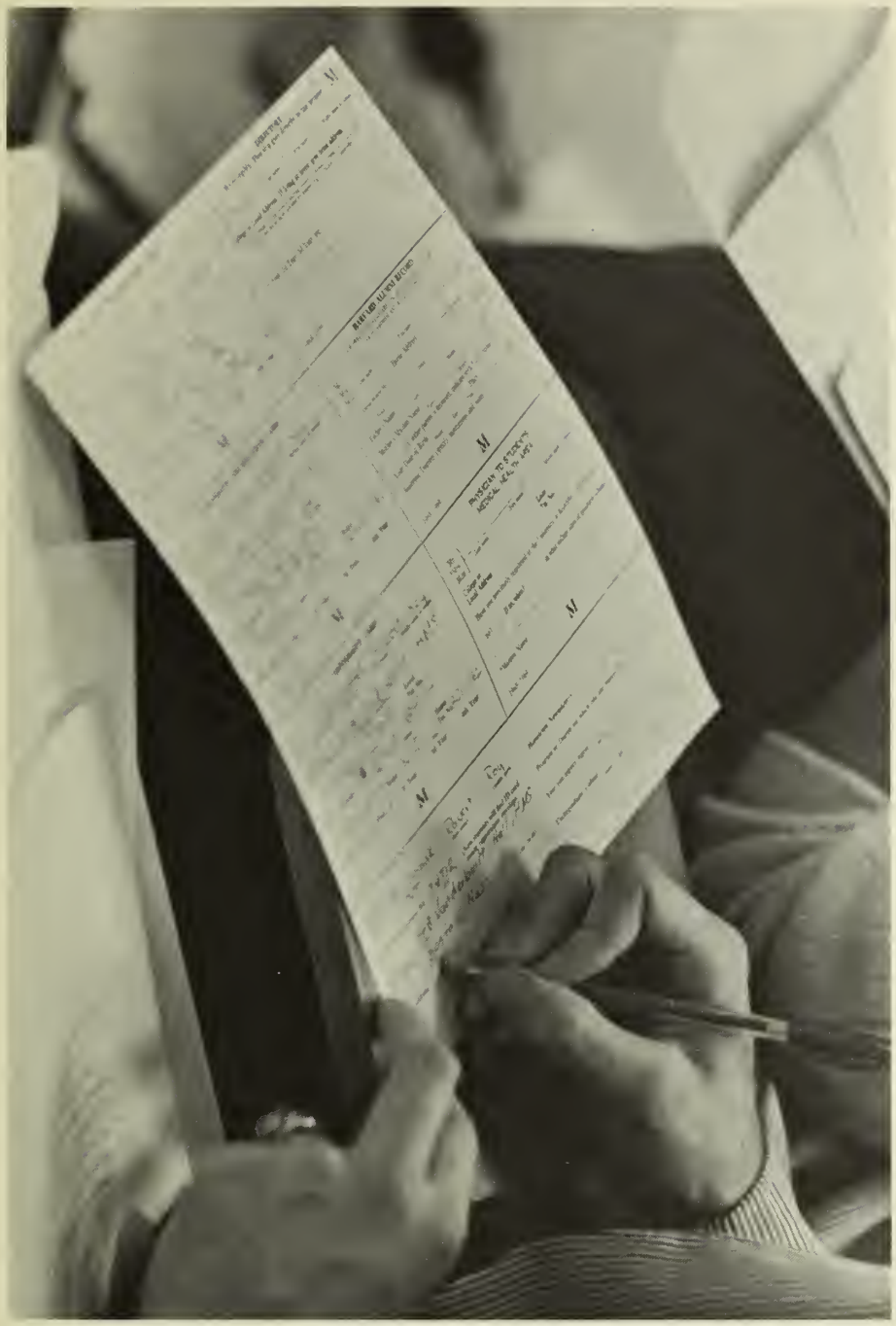
1. Age of the population.
2. Bio-medical factors.
3. Health industry's size and growth rate.
4. Change in character of illness.
5. Practice and financial arrangements.
6. Rising expectations of the public.
7. Urbanization.
8. Personnel shortages.
9. U.S. standing in medicine compared to other industrial countries.

Dr. Kety spoke of the human behavioral problems that constitute unfulfilled missions. Nineteen million Americans will suffer mental illness sometime during their lifetime. Mentally ill patients fill more hospital beds than do the sufferers of any other disease. It was previously believed that biochemistry, physics, and molecular biology offered the key to human behavior. Today more hope is held out for the contributions of psychology and sociology. Research provides hope for a better understanding of schizophrenia, affective psychoses, aging, and aggression and violence. Attention to four factors will influence progress with mental illness.

1. Researchers must pay attention to both medical and environmental factors. They must not seek only one solution in one area.
2. Treatment of the mentally ill must develop along humanitarian lines.
3. More money must be spent for research and development.
4. Medical personnel must be properly allocated.

Dr. Henry Beecher closed the symposium with an exploration of the problems of determining brain death. He discussed the criterion for brain death established by an *ad hoc* committee at HMS. (See *HMAB*, Fall, 1968).

Orientation offered a smorgasbord of ideas and impressions to the class of '72. The class heard the new curriculum explained with particular emphasis on what they are expected to gain and what they are expected to contribute. The character of modern medicine and the factors that influence that character were analyzed. There was ample opportunity both to listen to and talk with the faculty. Tours of teaching hospitals, academic departments, and the Countway Library introduced students to the vast physical plant. In short, orientation gave the students ample time to explore the environment in which they are to live and develop for the next four years.



CLASS OF 1972

Anderson, Jeffrey L.
Salt Lake City, Utah (U. of Utah)

Arnon, Stephen S.
Berkeley, Calif. (Harvard)

Bajart, Ann M.
New York, N. Y. (Vassar)

Baller, Julie
Pacific Palisades, Calif. (Radcliffe)

Beguin, Elaine D.
Fairport, N. Y. (Vassar)

Belcher, Charles D., 3d
Wilmington Del. (U. of Pennsylvania)

Belin, Daniel C.
Miami Beach, Fla. (Massachusetts Inst. of Tech.)

Benz, Edward J., Jr.
Bethlehem, Pa. (Princeton)

Berwick, Donald M.
Moodus, Conn. (Harvard)

Boger, Robert S.
Wayne, Pa. (Amherst)

Boyd, John A.
Merion Station, Pa. (Williams)

Brem, Steven S.
Fair Lawn, N. J. (Rutgers)

Brewer, David K.
Alton, Ill. (Princeton)

Brown, Allen L., Jr.
Wayland, Mass. (Massachusetts Inst. of Tech.)

Brown, Edward M.
Milton, Mass. (Harvard)

Brush, Alan D.
Elkins Park, Pa. (Cornell U.)

Burnes, Daniel C.
Framingham, Mass. (Harvard)

Buzney, Sheldon M.
Cleveland Heights, Ohio (Harvard)

Cabot, Edmund B.
Weston, Mass. (Harvard)

Candib, Lucy M.
Danby, Vt. (Radcliffe)

Cantrill, Herbert L., 3d
Springfield, Ill. (Yale)

Carrera, Guillermo F.
New Orleans, La. (Harvard)

Challender, Patricia A.
Chatham, N. J. (Wellesley)

Chassin, Mark R. G.
Manhasset, N. Y. (Harvard)

Chin, William W.
Hollis, N. Y. (Columbia)

Clowes, Alexander W.
Dover, Mass. (Harvard)

Cohen, Barry H.
Huntington Station, N. Y. (New York U.)

Colgan, Joseph P.
Larchmont, N. Y. (Dartmouth)

Come, Steven E.
Bethesda, Md. (Cornell U.)

Cowan, Douglas F.
Worcester, Mass. (Harvard)

Cowdry, Rex W.
Phoenix, Ariz. (Yale)

Curfman, Gregory D.
East Cleveland, Ohio (Princeton)

de Bruyn Kops, Julian, 3d
Dayton, Ohio (Harvard)

Diehl, Andrew K.
San Antonio, Texas (Yale)

Dimond, Paul K.
Stoughton, Mass. (Boston Coll.)

Doyle, Daniel B.
Elkhart, Ind. (Notre Dame)

Drazen, Jeffrey M.
Oak Park, Mich. (Tufts)

Eastman, Richard C.
Stanford, Calif. (Stanford)

Floyd, David A.
Farmington, Maine (Dartmouth)

Fox, Frederick J.
Lakewood, N. J. (Harvard)

Frank, Kenneth D.
Washington, D. C. (Amherst)

Frederiksen, James W.
Ferguson, Mo. (Cornell Coll.)

Freedman, Robert
Clayton, Mo. (Harvard)

Fulks, Richard M.
Athens, Ohio (U. of Ohio)

Gage, Thomas P.
Whitewater, Wis. (U. S. Air Force Academy)

Gallico, G. Gregory
Ridgewood, N. J. (Yale)

Garling, Andrew C.
Muncie, Ind. (Yale)

Gerber, Paul D.
Jamaica, N. Y. (Union)

Glass, Roger I.
Somerville, N. J. (Harvard)

Goldmann, David R.
Maplewood, N. J. (Harvard)

Gonzales, Jose R.
San Juan, P. R. (Harvard)

Goroll, Allan H.
South Orange, N. J. (Brandeis)

Green, Laurence H.
Needham, Mass. (Harvard)

Greenfield, Geoffrey M.
Beverly Hills, Calif. (Harvard)

Greiner, Paul T.
New Hyde Park, N. Y. (Harvard)

Grimes, Andrew M.
Newport, R. I. (Coll. of the Holy Cross)

Groves, James E.
Magargel, Texas (Harvard)

Gruber, Gabriel G.
Louisville, Ky. (Harvard)

Hainen, Ronald L.
Fostoria, Ohio (Ohio State U.)

Halperin, William E.
Loveladies, N. J. (U. of Pennsylvania)

Hamlin, Nason P.
Greenwich, Conn. (Wesleyan)

Harmel, Richard P., Jr.
Westport, Conn. (Harvard)

Herbert, Steven G.
Lansing, Mich. (Harvard)

Hertz, Kenneth C.
Brooklyn, N. Y. (Brown)

Hillier, Robert K.
Seattle, Wash. (Yale)

Hinrichsen, Mary Ann
Ames, Iowa (Radcliffe)

Hodge, Robert H., Jr.
Kansas City, Mo. (Princeton)

Huang, Belle
Flushing, N. Y. (Wellesley)

Hudspeth, Albert J.
Houston, Texas (Harvard)

Ilfeld, David N.
Beverly Hills, Calif. (Massachusetts Inst. of Tech.)

Jergesen, Harry E.
Mill Valley, Calif. (Harvard)

Johnson, Mark F.
Red Wing, Minn. (Harvard)

Kay, Monte S.
Roslyn Heights, N. Y. (Yale)

Kelling, Douglas G.
Waverly, Mo. (Harvard)

Kirshner, Howard S.
Merion Station, Pa. (Williams)

Kittredge, Diane
Winchester, Mass. (Smith)

Knowler, William
Iowa City, Iowa (U. of Iowa)

Koepsell, Thomas D.
Plainwell, Mich. (U. of Michigan)

Kohn, Martin S.
Elmont, N. Y. (Massachusetts Inst. of Tech.)

Langley, Kim
Los Angeles, Calif. (Pomona)

Larkin, Andrew B.
Kensington, Conn. (Harvard)

Lewis, Lorenzo, Jr.
Beaufort, N. C. (U. of North Carolina)

Lipson, Stephen J.
Staten Island, N. Y. (Yale)

Lowe, Robert
Kantville, N. S., Canada (Acadia)

Mason, Steven J.
Baltimore, Md. (Williams)

Masters, Kim J.
New York, N. Y. (Princeton)

McCullough, Dennis M.
Dollar Bay, Mich. (Harvard)

Mesulam, Marsel
Istanbul, Turkey (Harvard)

Michael, Max 3d
Jacksonville, Fla. (Vanderbilt)

Miller, William P.
Concord, N. C. (U. of North Carolina)

Mitchell, Arlene R.
Calgary, Alberta, Canada (Barnard)

Morgan, George J., Jr.
Scranton, Pa. (Bucknell)

Musliner, Thomas A.
New York, N. Y. (Harvard)

Musser, George L.
Yeagertown, Pa. (Haverford)

Nortman, Donald F.
Leonia, N. J. (Princeton)

ole Moiyoi, Onesmo K.
Loliendo, Tanzania, East Africa (Harvard)

Orellana, Tessa D.
Burtonsville, Md. (Massachusetts Inst. of Tech.)

Pavan, Peter R.
Quincy, Mass. (Harvard)

Pellegrini, John L.
Woodsville, N. H. (Northeastern)

Peterlin, Boris M.
Durham, N. C. (Duke)

Platt, Richard
Wilmington, Del. (U. of Pennsylvania)

Powell, Robert O.
Stockton, Calif. (U. of California, Berkeley)

Rettig, Philip J.
Northbrook, Ill. (Coll. of the Holy Cross)

Riggs, Suzanne G.
Baltimore, Md. (Pembroke)

Romero, Jorge A.
Santurce, P. R. (Massachusetts Inst. of Tech.)

Rosenthal, Sara G.
Pleasantville, N. Y. (Mount Holyoke)

Schemmer, John A.
Pawling, N. Y. (Yale)

Schlessinger, Leslie D.
Chicago, Ill. (Princeton)

Schoonover, Stephen C.
Schenectady, N. Y. (Harvard)

Schulman, Alan N.
Munich, West Germany (Harvard)

Shimshak, Robert R.
Paterson, N. J. (Rutgers)

Smith, Daniel H.
Oklahoma City, Okla. (Harvard)

Soverow, Gary J.
Wilbraham, Mass. (Princeton)

Sparks, John W.
Westfield, N. J. (Massachusetts Inst. of Tech.)

Steiner, Robert W., Jr.
Peoria, Ill. (Dartmouth)

Steinglass, Kenneth M.
Hewlett, N. Y. (Yale)

Steinman, Lawrence
Culver City, Calif. (Dartmouth)

Sviokla, Sylvester C., 3d
Brockton, Mass. (Harvard)

Swedlow, David B.
Columbus, Ohio (Massachusetts Inst. of Tech.)

Toth, Eileen R.
Phillipsburg, N. J. (Ursinus)

Tria, Alfred J., Jr.
Brooklyn, N. Y. (Harvard)

Ukena, Thomas E.
Ames, Iowa (Oberlin)

Varga-Golovcsenko, Steven
Huntington Station, N. Y. (Harvard)

Waitzkin, Howard B.
Akron, Ohio (Harvard)

Waksmonski, Carol A.
Salem, Mass. (Smith)

Watson, Nils C.
Concord, Mass. (Harvard)

Weller, Peter F.
Needham, Mass. (Harvard)

Whyman, John S.
Roslyn Heights, Long Island, N. Y. (Princeton)

Grappling With Relevancy

Behavioral science. The words that have caused endless curriculum committees in the country's medical schools to grapple with relevancy. Harvard had its share of difficulties and this year a sweeping new approach to the teaching of the sciences of human behavior is underway.

The planning of the curriculum in human behavior is coordinated by a committee chaired by Dr. Leon Eisenberg, professor of psychiatry at HMS. Members of his committee are: Dr. Leona Baumgartner, professor of social medicine; Dr. Gerald Caplan, clinical professor of psychiatry; Dr. Elliot Mishler, associate clinical professor of psychology; Dr. Torston Wiesel, professor of physiology; John Nemiah '43B, professor of psychiatry; and Dr. Jerome Kagan, professor of psychology in the Faculty of Arts and Sciences.

The major features of the new program are a significant increase in the time allotted for teaching (from 40 to 84 hours) and a substantial increase in elective time. The philosophy recognizes both the increasing role played by the social and behavioral sciences in all branches of medicine, and the need for subspecialists in these areas to strengthen particular medical disciplines.

The objectives of the core curriculum will be to introduce the student to the basic biological, psychological and sociological underpinnings upon which the practice of medicine and psychiatry rest, to establish familiarity with the methodologies and conceptualizations central to the behavioral sciences and with the opportunities they offer for the acquisition of new knowledge, and to provide direct personal experience in the application of such principles to contemporary socio-medical problems.

Each entering student is required to select one course from the seminar series, one from the field exercises and to attend the second year lectures and clinics.

The seminar series consists of 11

one and a half hour group discussions based on pre-assigned readings. They will be limited to a maximum of 14 students, in order to permit individual participation. The following seminars are being offered:

Sociological Perspectives on Health, Illness and Disease

The aims of this course are to relocate health, illness and the practice of medicine within their social context to show how health and illness may be viewed and described as social phenomena, and the implications of examining medical care as a socially defined, regulated, organized and embedded set of practices. Directed by Dr. Elliot Mishler, associate clinical professor of psychology in the department of psychiatry.

Social Psychiatry

This course will be concerned with the relationship of social and cultural factors to mental health and mental illness, and to the treatment and control of mental disorder. Directed by Dr. Morton Beiser, assistant professor of social psychiatry, Harvard School of Public Health.

The Organization of the Medical Profession

This course will focus on the social organization of medicine as a profession. The specific concerns and approaches to the sociology of medicine will be compared and discussed as tools for understanding the structure of the profession. Directed by Dr. Stephen J. Miller, associate professor of sociology, Brandeis University.

Child Development

This seminar will consider the development of cognition and perception from birth through adolescence, the effects of stimulation and deprivation, the biological basis of intelligence and learning, behavior and learning disorders and the psychopharmacology of treating such disorders. Directed by Dr. Keith C. Conners, assistant professor of psychology in the department of psychiatry.

Medical Sociology

This course will be concerned with the medical profession as a distinctive occupational role, with the process of "socialization" into that role, and with the patterned ways in which medical information is transmitted and diffused. Problems in the distribution and delivery of medical care will be considered, especially in the light of expanded provisions for third party payments and the advocacy of patients' health rights. Directed by Dr. Louisa P. Howe, assistant professor of sociology in the department of psychiatry.

Economic Criteria and Public Policy in Health and Medical Care

The relevance of economic analysis in the determination of public policy will be discussed, such as the financing of care, manpower problems, and benefit-cost and cost-effectiveness analysis. Directed by Dr. Rashi Fein, professor of medical economics.

The Seven Ages of Man

This seminar will study man in birth and infancy, young childhood, adolescence, late adolescence, adulthood and old age unto death. It will trace the evolution of his appetites in relation to the elaboration of the structures of his ego with its regulatory functions. Directed by Dr. Richard Galdston, associate in psychiatry.

The Role of the Physician in the Hospital Setting

The purpose of the course will be to help foster improvement in patient care through an understanding of hospital organization and the inter-relationships of health workers. Directed by Dr. Roger Sweet, associate in preventive medicine and Dr. Andrew C. Twaddle, research associate in sociology.

The Basic Concepts of Psychology

This seminar will emphasize those aspects of contemporary dynamic psychology that lend themselves to a comprehensive understanding of psychological experience at different periods in life. Special emphasis will be placed on the significance of anxiety and depression, the two most common symptoms of psychological distress. Directed by Dr. Elizabeth Zetzel, associate clinical professor of psychiatry.

Family Medicine

This course examines the issues raised by the challenge of educating the family physician in an age of increasing specialization. Directed by Dr. Joel Alpert, assistant professor of pediatrics.

Psychobiology

Students will be offered an introduction to the experimental study of behavior and applications to physiology and pharmacology. The objective will be to give students direct experience of the experimental basis of theoretical generalizations and clinical inferences. Directed by Dr. Peter Dews, Stanley Cobb Professor of Psychiatry and Psychobiology and Dr. W. H. Morse, associate professor of psychology in the department of psychiatry.

The field exercises, from which the student must choose one, are designed to provide experiences that will bring them into direct contact with individual patients and develop an appreciation by the student of the social, economic and psychological problems created in the patient, his family, and the community by his illness. The students will work in groups of two to four under the tutelage of senior staff, attending eleven afternoon sessions of four hours each. The following facilities will participate in the field exercises:

The **departments of medicine** at the Massachusetts General Hospital, Peter Bent Brigham Hospital, Beth Israel Hospital, Boston City Hospital and the University Health Services.

The **departments of psychiatry** at Massachusetts Mental Health Center, Judge Baker Guidance Center, Laboratory of Community Psychiatry, Massachusetts General Hospital and Beth Israel Hospital.

The **departments of surgery** at the Peter Bent Brigham Hospital, Boston City Hospital and Massachusetts General Hospital.

The **family medicine units** at Children's Hospital, Massachusetts General Hospital and Harvard Medical School.

The required second year lecture series of 15 hours will be devoted to a course entitled Introduction to Psychopathology directed by John Nemiah '43B, professor of psychiatry. Additionally, nine hours will be devoted to interviewing and history-taking in the Physical Diagnosis course.

The much expanded elective area has been planned and integrated appropriately to offer selected students a three-year educational program of considerable richness and depth in psychobiology, the psychological and social sciences and psychiatry. Beyond the regular Medical School electives, students may avail themselves of courses offered at Harvard University and Massachusetts Institute of Technology in the departments of social relations, psychology, economics, the Center for Urban Studies and the Center for Medical Care.

It is anticipated that this new curriculum, with its augmented faculty, will establish a new pathway through the medical curriculum that will more adequately prepare its graduates for careers of practice, research and teaching in psychiatry and social medicine. It will also serve as the basis for building a greater awareness of the contributions of the behavioral sciences to all fields of medicine.

"Physician Advocates"

Academic departments of medicine have been a major force in perpetuating a two-class system of medicine. So believes Dr. Robert C. Buxbaum, instructor in medicine and member of the Harvard Family Health Care Program at The Children's Hospital.

Dr. Buxbaum recently addressed a regional meeting of the American College of Physicians and proposed that his fellow professionals become "physician advocates" in their communities, as a part of their relations with patients, and of their concern for disadvantaged and neglected members of society.

He admitted that his proposal was not original, having first been urged more than a century ago by Rudolph Virchow. The German pathologist, credited as one of the founders of modern medicine, said, "The Physician is the natural advocate of the poor."

The need for advocacy arises when institutions and professionals become too removed from their users; when abuses exist that make access to the profession difficult; when elites arise to force their definition of service upon the public; and when bureaucracies pre-empt the profession-client relationship.

Dr. Buxbaum expressed disappointment at the profession's lack of response to the major social issues within medicine. "It is," he remarked, "as though the departments of medicine did not understand that teaching and research are functions that apply equally to rich and poor."

On the more positive side, he said that new sets of patient-physician relations are being established. He disclosed that a small group of professionals have been working in several urban communities, particularly Boston, "as advocates for the most disadvantaged and medically neglected." The participants in the group believe the results to date are encouraging.

In conclusion Dr. Buxbaum warned that much of the development might seem slow and painful. He said that those who assume the advocacy role "must be willing to subordinate one's own professional priorities to those of the community; health, after all, is not the major issue at hand in most ghettos. . . . One must recognize that poor people may be attempting to solve other problems within the community and may be setting agendas other than ours."

The Seeley G. Mudd Bequest

Harvard Medical School has received a bequest of $100,000 from the estate of the late Seeley G. Mudd '24 to be used for a laboratory of experimental surgery. The laboratory will be named for Dr. Mudd's uncle, Harvey Gilmer Mudd, M.D.

A noted philanthropist in the cause of higher education, Dr. Mudd was a generous benefactor of the California Institute of Technology, University of Southern California, Occidental College and the Pacific School of Religion, among others.

During his life, he was engaged in private practice and research in internal medicine, cardiology and cancer. He had been professor of radiation therapy at California Institute of Technology and dean of the School of Medicine at the University of Southern California. Later in life, he devoted much time to administration serving as vice-president of the Board of Trustees at the University of Southern California, president of the Good Hope Medical Foundation, and a trustee at Cal Tech and Carnegie Institute.

Community Health

Donald A. Kennedy, Ph.D. has been appointed a member of the core staff of the Center for Community Health and Medical Care at Harvard.

He is a former assistant professor in preventive medicine and lecturer in sociology at Tufts University. Dr. Kennedy received the A.B. degree from Harvard in 1951 and the Ph.D. degree from Cornell University in 1959.

The Center, under the direction of Dr. Paul M. Densen, former deputy administrator of the health services administration of New York City, is concerned with how medical care can best be organized for optimal service to all segments of the population in the U.S.

Special Consultant Named at HSDM

Russell A. Dixon, D.D.S., has been named special consultant to Dr. Paul Goldhaber, dean of the Harvard School of Dental Medicine.

Dr. Dixon served as a member of the Board of Overseers Committee to Visit the Harvard Medical School and the Harvard School of Dental Medicine from 1961 to 1967. He was dean of the College of Dentistry at Howard University from 1931 until his retirement in June, 1966. Under Dr. Dixon's direction, Howard's College of Dentistry quadrupled its teaching staff and increased its student enrollment from 40 to more than 300. His guidance aided the College in achieving and maintaining full accreditation by the Council on Dental Education of the American Dental Association.

Dr. Dixon is presently a member of the Special Medical Advisory Group of the Veterans Administration. He was a Regent of the National Library of Medicine from 1963 until 1967. From 1954 until 1957 he was on the National Research Council Subcommittee on Clinical Investigation of the Committee on Dentistry and he was also a member of the Board of Directors, National Research Council. In 1934, he commenced the development of the only existing program for the education and training of dental hygienists in metropolitan Washington, D.C.

Dr. Dixon attended the Hampton Institute and Ferris Institute before receiving the D.D.S. degree from Northwestern University in 1929.

Assistant to the Dean

Robert S. Blacklow '59 has been appointed assistant to the Dean for curriculum. Dr. Blacklow is instructor in medicine at Harvard Medical School.

After graduating from HMS, he was a special postdoctoral fellow of the USPHS serving in the department of chemical pathology at St. Mary's Hospital Medical School in London from 1964 to 1965. He held a Moseley Travelling Fellowship from Harvard at the same institution from 1966-67. He has served as chief resident physician at the Peter Bent Brigham Hospital.

Weariness "without cause"

Psychic tension with depressive symptomatology?

"For weeks I've done practically nothing and I'm always tired. I wake up tired and I go to bed tired. It's absurd. It's really absurd."

When the patient complains of fatigue, and you can find no organic cause, you recognize that it may serve her as a means of avoiding responsibilities or facing an emotional problem. It is, in effect, a psychological retreat behind a somatic cover of continuous fatigue —one of the many depressive symptoms often associated with psychic tension.

She needs counsel and reassurance, and perhaps a tranquilizer to attenuate excessive tension and help restore the capacity to cope. As an aid to successful management, consider the value of Valium® (diazepam). As psychic tension is eased by Valium therapy, secondary depressive symptoms too may subside. The patient feels more capable, therefore more hopeful; better able to handle situations of intense stress.

Before prescribing Valium (diazepam), consult complete product information; a summary follows:

Indications: Tension and anxiety states; somatic complaints which are concomitants of emotional factors; psychoneurotic states manifested by tension, anxiety, apprehension, fatigue, depressive symptoms or agitation; acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in: skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders; athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy).

Contraindications: Known hypersensitivity to drug; children under 6 months of age; acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

Warnings: Not of value in treatment of psychotic patients, and should not be employed in lieu of appropriate treatment. As with most CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (*e.g.*, operating machinery, driving). When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increase in dosage of standard anticonvulsant medication; abrupt withdrawal in such cases may also be associated with temporary increase in frequency and/or severity of seizures. Advise patients against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance. Keep addiction-prone individuals (such as drug addicts or alcoholics) under careful surveillance because of their predisposition to habituation and dependence. Use of any drug in pregnancy, lactation or in women of childbearing age requires that potential benefit be weighed against possible hazard.

Precautions: If combined with other psychotropics or anticonvulsants, carefully consider individual pharmacologic effects—particularly with known compounds which may potentiate action of Valium, such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other antidepressants. Employ usual precautions in the severely depressed or in those with latent depression; suicidal tendencies may be present and protective measures necessary. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation (initially 2 to 2½ mg once or twice daily, increasing gradually as needed or tolerated).

Adverse Reactions: Side effects most commonly reported: drowsiness, fatigue and ataxia. Infrequently encountered: confusion, constipation, depression, diplopia, dysarthria, headache, hypotension, incontinence, jaundice, changes in libido, nausea, changes in salivation, skin rash, slurred speech, tremor, urinary retention, vertigo and blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances and stimulation have been reported; should these occur, use of the drug should be discontinued. Because of isolated reports of neutropenia and jaundice, periodic blood counts and liver function tests are advisable during long-term therapy. Minor changes in EEG patterns (low-voltage fast activity) observed during and after therapy and are of no known significance.

Dosage: Individualize for maximum beneficial effect. *Adults:* Tension, anxiety and psychoneurotic states, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. *Geriatric or debilitated patients:* 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See **Precautions.**) *Children:* 1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).

Supplied: Valium® (diazepam) Tablets, 2 mg, 5 mg, and 10 mg; bottles of 50, 100 and 500.

ROCHE
Roche
LABORATORIES
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

Valium® (diazepam)

helps relieve psychic tension with associated depressive symptoms